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[OFFICIAL NOTICE.]

Annual Meeting, Illinois Gas Association.

ILLINOIS GAS ASSOCIATION, OFFICE OF THE SECRETARY, ELGIN, ILLS., Feb. 6, 1911.

To the Members, Illinois Gas Association: The annual meeting of the Illinois Gas Association will be held in the Auditorium Hotel, Chicago, Ills., March 15th and 16th, 1911. The banquet will be held the evening of March 15th.

As soon as the papers, etc., have been decided upon, the information will be forwarded. Yours truly, C. B. STROHN, Secretary.

[OFFICIAL NOTICE.]

Seventh Meeting, Southwestern Electrical and Gas Association.

SOUTHWESTERN ELECTRICAL AND GAS ASSOCIATION, 1316 COMMERCE ST., DALLAS, TEX., Jan. 29, 1911.

To the Members, Southwestern Electrical and Gas Association: At a called meeting of the Advisory and Executive Committees of the Soutwestern Electrical and Gas Association, it was decided to hold the Seventh Annual Convention of the Association in Houston, Tex., April 27, 28 and 29, 1911. D. G. FISHER, Secretary.

[OFFICIAL NOTICE.]

New York Section, Illuminating Engineering Society.

The March meeting of the New York Section, Illuminating Engineering Society, will be held in the Auditorium of Gimbel Brothers' Department Store, located at 32d, 33d streets, Broadway and 6th avenue, Thursday evening, the 9th inst., at 8:15 P.M.

Preceding the meeting an inspection of the lighting will be made. The building will be open at 7:30 P.M. Guides will be available at the 33d street entrance.

The paper of the evening will be "The Lighting of a Large Department Store," by Clarence L. Law and Albert Jackson Marshall. The lecture will be further augmented by stereopticon views. Advance copies of the paper will be mailed upon request. Ladies are invited.

A. J. MARSHALL, Secretary.

BRIEFLY TOLD.

FEBRUARY MEETING, PHILADELPHIA SECTION, NATIONAL COMMERCIAL GAS ASSOCIATION.—The regular stated meeting of the Philadelphia Section, National Commercial Gas Association, was held the evening of Tuesday, the 28th ult., in the United Gas Improvement Company's building, 1,035 Market street. Mr. C. G. Goeltz, President of the Philadelphia Section, presided. Secretary Bardsley read the reports of various committees and the names of applicants for membership to the Association. After the regular business, Mr. Goeltz introduced the speaker of the evening, Mr. W. A. Castor, Superintendent of Meters, Philadelphia Gas Works, turning the chair over to Mr. A. M. Boyd. The subject of Mr. Castor's address was "Gas Meters." In order to make the paper perfectly clear, Mr. Castor set up an exhbiition meter, from which the back and front, also the top of the case, had been removed. Diagrams showing the four points of cut off, of the D-slide valves, and also an enlarged model, showing the action of the valves and diaphragms, were referred to. Mr. Castor gave the history of the gas meter, with the names of the various inventors who improved it. It was 45 years after gas was first manufactured that the gas meter was introduced. Before this time charges were made according to the size and number of burners in a dwelling, and these burners were only allowed to be lighted during certain hours. This was kept track of by inspectors. Although wet meters and other various kinds have been tried, gas companies are generally using "The 2-diaphragm, double-D," slide-valve, dry meters. This meter is contained in a tin case, which is divided into three compartments by means of a horizontal and vertical partition. Above the horizontal partition is a gas-tight chamber containing the slide valves and registering mechanism. The two vertical compartments in reality form four measuring chambers, consisting of the two leather diaphragms and the two spaces in front of the diaphragm disks. The diaphragms have a reciprocating motion, which is, however, converted into a rotary motion, through the flag arms, to the registering mechanism. The gas meter is built on the same principle as the slide valve locomotive, with the exception that the locomotive works expansively, while the gas meter does not, the valves not cutting off until the chamber is entirely full. The valves are set 90° apart. The allowable drop in pressure, through a meter, which is

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due to friction of mechanical parts and of the gas through various turns and passages, is approximately $\frac{3}{16}$ of an inch. The prepayment meter, which was first introduced in England and later in the United States, is a meter by which gas can be bought by inserting a coin in a slot in the meter. While this meter has disadvantages it also has many advantages over the ordinary meter, and in the city of Philadelphia 168,000 out of a total of 327,000 meters are of the prepayment sort. During the year 1910 the Philadelphia gas works, because it carries the above two kinds of meters, was compelled to change 20,000 meters at a cost of over $1 each, due to whims of consumers. The discussion which followed the paper was participated in by Messrs. Boyd, Snyder, Conrad, Neff, Anderson, O'Halloran and O'Donnell. The questions and answers were as follows: "Does a meter which a consumer allows to stand in disuse for any length of time become injured?" "Yes, to the extent that condensation and foreign particles in the gas are thrown down in the valve seats and working parts, thus interferring with their proper action." "What is the life of an ordinary meter?" Gas engineers place this at 7 years." "Does a meter work properly, which has been knocked out of plumb?" "It is very liable to work inaccurately, as it is designed to work when set properly. Due to the meter being out of plumb, the valves will probably work improperly." "Do meters as a rule run fast or slow?" "The records for all meters proved during year 1910, showed the meters, in Philadelphia, to run about 2 per cent. slow, the gas company thus giving the consumer 2 per cent. of the gas used free of charge." The subject for the next meeting will be "Gas Manufacture." And in preparation for this, the members of the Association will take a trip, the Saturday prior to the meeting, through the Point Breeze Works, of the Philadelphia Gas Company.

DEATH OF MR. G. L. MANCHESTER.—We are indebted to a correspondent in Boston for the following respecting the death of Mr. George Langton Manchester, whose demise occurred in Easthampton, Mass., the night of Friday, February 3d. Deceased, who was President of the G. L. Manchester Company, dealers in hardware and plumbers' supplies in Easthampton, was for many years Treasurer and Superintendent of the Easthampton Gas Company, or until the fall of 1909, when he retired therefrom, on the occasion of the sale of that property to the Connecticut River Power Company. He was one of the Trustees of the Easthampton Savings Bank, and had served with distinction on its Board of Investment for a period of 25 years. He served the town of Easthampton as Selectman for several terms, and at one time was Superintendent of the Easthampton Water Works. Born in Westford, Mass., January 28, 1836, at the age of 16 he went to Taunton, Mass., where he learned the trade of plumber. Later on he went to Providence, R. I., and took service with the Providence Steam and Gas Pipe Company, returning to Easthampton about 1860. He is survived by two sisters, a son and a daughter. The funeral services were held in his late home, the afternoon of Sunday, the 5th ult., the Rev. C. H. Hamlin, of Payson Church, officiating.

ANNUAL DINNER, COMMERCIAL DEPARTMENT, NEW YORK CONSOLIDATED GAS COMPANY.—The annual dinner of the Commercial forces of the New York Consolidated Gas Company was held in the Hotel Majestic, 72d street and Central Park West, at 7:30 o'clock, the evening of February 25th. The banquet hall of the Majestic was beautifully decorated for the occasion, and quite 200 employees were in attendance, representing the branch offices at Hester street, Irving place, 42d street, Amsterdam avenue and Third avenue; also the employees from the general offices of the Company and its law and fuel appliance divisions. Mr. Charles G. Smith, Superintendent of the Hester street and Irving place branch offices, represented the Committee on Arrangements at the guest table as Toastmaster. The following officers of the Consolidated Gas Company were present as guests: Mr. George B. Cortelyou, President; Mr. W. R. Addicks, Vice-President; Mr. L. B. Gawtry, Vice-President; Mr. R. A. Carter, Vice-President and Secretary; Mr. H. M. Brundage, Assistant Secretary; Mr. F. L. Lambrecht, Auditor. The following gentlemen, officers of the other gas companies, who were former employees of the Consolidated Gas Company and representatives of its commercial department, were also seated at the guest table:

Mr. W. J. Clark, Vice-President, Westchester Lighting Comyany.
Mr. E. S. Bellows, Ass't Sec'y and Treas., Westchester Lighting Company.
Mr. L. H. Werner, Secretary, Central Union Gas Company.
Mr. H. B. McLean, Superintendent, Fuel Appliance Department.
Mr. Henry Simpson, Superintendent, 42d street and Third avenue Branch Offices.
Mr. John R. Fenniman, Superintendent, Amsterdam avenue Branch office.
Mr. Frank R. Barnitz, General Superintendent, Commercial Department.
Mr. Hugo B. Reinach, Ass't Gen'l Superintendent, Commercial Department.

During the dinner the choruses of several popular, up-to-date songs were sung, and after coffee and cigars had been served, Mr. Charles G. Smith made a short address in which he explained that the dinner originated in the thought that it would, at least once a year, afford an opportunity for the members of the commercial department to look upon each other faces, grasp eaeh other hands, exchange courtesies and reminiscences, thereby fostering that spirit of comaraderie so pleasant to all, and so well typified in the famous motto of Dumas' Three Musketeers: "One for all—all for one," adding that it was manifest by their presence that the idea met with the approval of the officers of the Company. In a few well chosen words Mr. Smith requested the gentlemen present to drink a toast to the early restoration to health of former-President, Mr. Harrison E. Gawtry, now Chairman of the Board of Trustees. President George B. Cortelyou was then introduced, who, after feelingly and eloquently acknowledging his introduction, proceeded to impress upon the employees the necessity of a continuance of that policy of forbearance and patience with the public, so essential in continuing the good feeling that has been established and which all could help in keeping up. The speech was interspersed with several good stories and was listened to with great satisfaction. The employees then welcomed another pleasant interlude in the shape of an address from Vice-President Robert A. Carter, head of the Commercial Department, who, after a very enthusiastic reception at the "hands" of the employees, caused thoughts of pleasure and satisfaction when he stated he was able to say that, of the many reports he received from the department so very small a percentage showed any evidence of inaccuracy or carelessness, that he was willing to charge it off to poor, frail human nature. His cordiality and free measure of kind expression brought the employees to the proper frame of mind to enjoy the vaudeville entertainment that immediately followed the speeches. Upon the completion of that division of the programme, Mr. Smith expressed the thanks of the commercial department to the Committee on Arrangements for the success of the dinner and entertainment. The members of the Committee on Arrangements are as follows:

Chas. Werner and S. B. Bruce, Hester Street Branch Office.
C. D. Immen, Jr., Treasurer, and S. N. Johnson, Irving Place Branch Office.
J. B. Daly and E. T. Graham, 42d Street Branch Office.
Chas. Brussell and John J. Kelsh, Amsterdam Ave. Branch Office.
Wm. G. Peterson and Robert Roberts, Jr., Chairman, Third Ave. Branch Office.
J. J. Creeden and A. L. White, Fuel Appliance Department.
J. H. N. Armstrong and Secretary J. J. Norton, General Office; and F. R. Barnitz, *ex officio*, General Superintendent.

Among those present were the following:

P. J. Schneider, Treasurer, Central Union Gas Co.
S. H. Benton, Attorney, Law Department, Consolidated Co.
H. E. Almberg, Asst. Attorney, Law Department, Consolidated Co.
F. L. Sullivan, Asst. Attorney, Law Department, Consolidated Co.
Philip Cross, Asst. Superintendent, Fuel Appliance Department.
I. C. Kingsbury, Superintendent, Hester Street Street Department.
W. G. Morris, Chief Clerk, Accounting Department, Consolidated Co.
J. D. Collins, Asst. Superintendent, Hester Street Branch Office.
C. G. Kingsbury, Chief Clerk, Hester Street Branch Office.
W. B. Irwin, Asst. Superintendent, Irving Place Branch Office.
E. Sitterly, Chief Clerk, Irving Place Branch Office.
W. F. Caldwell, Asst. Chief Clerk, Irving Place Branch Office.
E. Wells, Cashier, Irving Place Branch Gffice.
A. C. Johnson, Asst. Superintendent, 42d Street Branch Office.
F. H. Hulbert, Chief Clerk, 42d Street Branch Office.
C. H. Seaver, Asst. Chief Clerk, 42d Street Branch Office.
C. E. Reuss, Asst. Superintendent, Third Ave. Branch Office.
E. P. Prezzano, Chief Clerk, Third Ave. Branch Office.
G. W. Thompson, Chief Clerk, Amsterdam Ave. Branch Office.
C. Burchard, Cashier, Amsterdam Ave. Branch Office.—F. R. B.

THE ANNUAL REPORT OF THE ELECTRICAL DEPARTMENT OF THE DISTRICT OF COLUMBIA.—From the results obtained in Washington, D. C., during the past year in public lighting, the following figures are abstracted.

The Lamps in Service July 1, 1910, *as Compared with July* 1, 1909, *were as Follows.*

Kind of Light.	Price Per Lamp Per Year.	1909.	1910.
Flat flame gas, 5 feet	$18.00	16	16
Mantle gas, 3 feet	20.00	8,694	9,090
Naphtha, mantle—60-candle power	22.80	1,538	1,224
Electric incandescent, 25 to 40-candle power	20.00	1,685	2,191
50-candle power	30.00	6	....
75 to 80-candle power	35.00	71	105
100-candle power	35.00	4	4
195 to 200-candle power	60.00	....	2
4-glower Nernst	65.00	60	60
Electric arc	0.00	1,403	1,469
Street sign lamps, gas, 2½ cubic feet	12.50	445	499
Electric	12.50	7	29
Total		13,929	14,689
Increase			760

The largest increase was in electric lamps and the greatest decrease in those using naphtha, which seems to be the natural tendency throughout the country. The small upright, single burner gas lamps hold their own with an increase of about 400 lamps, which is also true of the majority of the larger cities here. Many improvements have been carried forward after a long series of tests, and this work does not appear in the figures, as it covers the replacement of old burners, lamps and accessories for new and of new post equipment, which is a credit to the city, and to Mr. Walter Callen, the genial Electrical Engineer of the district.

Recent Improvements in Holder Construction.

[Prepared for the JOURNAL, by MR. J. ALEX. MAYERS.]

The 1,500,000 cubic foot holder, shown at different stages of development in the accompanying illustrations, presents some novel features in modern gasholder construction.

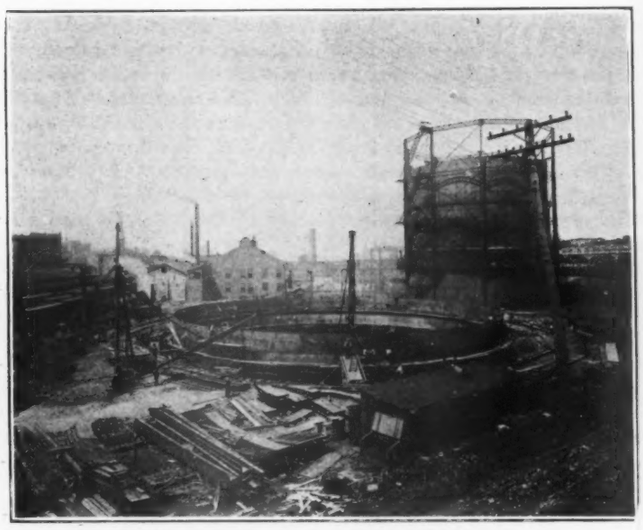

Fig. 1.—Lower Courses of Tank and Inner Lift. Sides.

Bottom.—The bottom plates are $\frac{5}{16}$-inch thick, with a $\frac{3}{8}$-inch outer course. By using well-straightened plates of this thickness, and overall pitch dimensions of not over 6 feet by 20 feet, buckles were avoided and a uniformly flat bottom obtained. The lowest course of tank side plates was 1 inch thick, with sextuple-riveted butt straps.

Foundation Top Dressing of Sand Only.—This Harrisburg holder was designed for an outlet pressure, when fully inflated, of 8.6 inches of water. The steel tank, which is 143 feet 6 inches in diameter, by 35 feet deep, was mounted on a 1½-inch layer of dry sand, instead of the usual sand-cement mixture spread over the top of the foundation. The sand was confined in place by an annular course of grout around the outer circumference, run under the tank bottom after lowering. Sand only was given preference over sand and cement, the latter being held to have more of a theoretical than a practical claim. For its hydration the dry mixture of sand and cement usually spread over holder foundations depends upon leaks and moisture condensing on the under side of the bottom plates and seepage given off from the foundation. Without pre-mixing with water, a poorly bonded grout is obtained at best, while the uncertain and variable source of water supply usually produces irregular patches of cement mortar unevenly distributed. The variable contraction in surface volume may bring excessive strains and occasional leaks at the bottom plate joints. If sand only is used, the settling would apparently be more uniform when the full weight of the completed tank and its contents is applied.

Fig. 2.—View from Adjoining Holder.

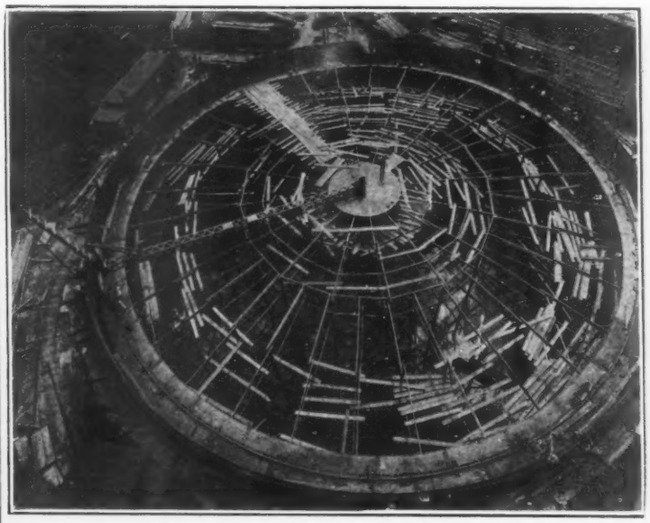

Fig. 3.—Assembling Crown on Permanent Frame.

The actual facts, as observed when old holders have been dismantled for relocation, indicate that the tank usually rests on the bottom rivet heads on the main foundation, and that the confined surface filler relieves the bottom plates between joints of some of the tensile strains that result when allowed to act as beams. Dry sand appears to be as satisfactory, if not preferable, to the sand-cement cakes for this purpose. Forcing grout through the bottom lowering-screw holes, and under the outer rim of the tank, has likewise proved successful, particularly under large holders, but is usually adopted only where the bottom plates show buckling.

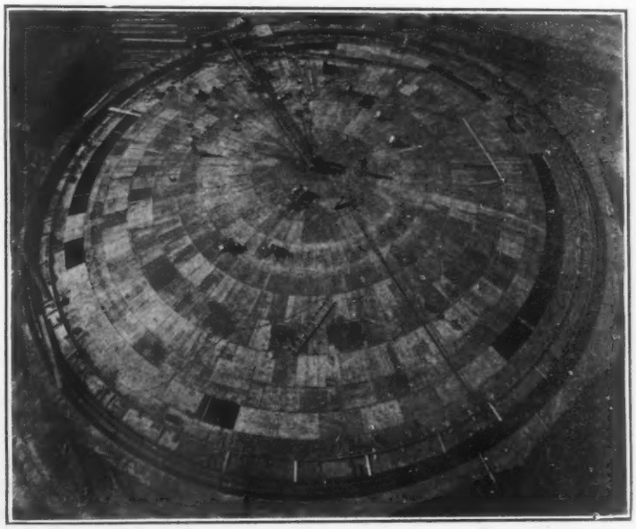

Fig. 4.—Crown and Light Openings.

Entire Crown and Sides Caulked.—Erected for the United Gas Improvement Company, at Harrisburg, Pa., last year, it has the unique distinction of having been assembled gas tight, with metal-to-metal joints during the erection progress, with practically no leaks to be caulked when the holder was tested.

Ever since holders were first built, a continuous effort has been made, and various schemes tried, to make the joints between the light sheets gas tight. Occasionally, old holders, when dismantled, are found to have strips of lead between them; an expensive and tedious method of construction. Later came the use of sal ammoniac and other oxidizing agents, which were supposed to rust the joints tight, but which frequently worked loose when dry, with the motion and vibration, resulting in leaks; or often, through careless or too liberal application, rusted the sheets through where the deposit was thickest, particularly those plates most frequently immersed, which deteriorate most rapidly. This custom, practiced until recently, gave way to metal-to-metal construction, the seams being made bright by

sand blasting, filing and wire brushing; but even this method was productive of numerous leaks.

Although caulking is universally employed for making the heavy plate seams gas and water tight, it has not been used for the light sheets of the crown and holder sides except for closing leaks while testing after completion. The side sheets, of No. 10 iron, are usually fastened together with $\frac{5}{16}$ inch tapered (or hickey) rivets, spaced at 1 inch pitch, the rivets being driven by hand or air tools. The Cruse-Kemper Company, who erected this holder, make a specialty of thoroughly caulking all outside seams of both light and heavy plates, while assembling during erection and before testing, which practice has proved a desirable one for the purchaser. With specially designed tools, and the labor saved in closing leaks during inflation, this can be done on both large and small holders without exceeding the allowable erection costs, and greatly diminishes the chances of leakage for the future.

Crown.—The spherical crown, which has a rise of about 5 feet 8 inches for the inner lift diameter of 137 feet 1 inch, was remarkable in that the 545 plates comprising the 13 courses fitted perfectly when assembled in position, without a single buckle or inaccuracy of alignment at any of the seams. With the exception of the two outer courses, which were butted, the entire crown was lap-jointed and double riveted, $\frac{5}{16}$-inch plates being used.

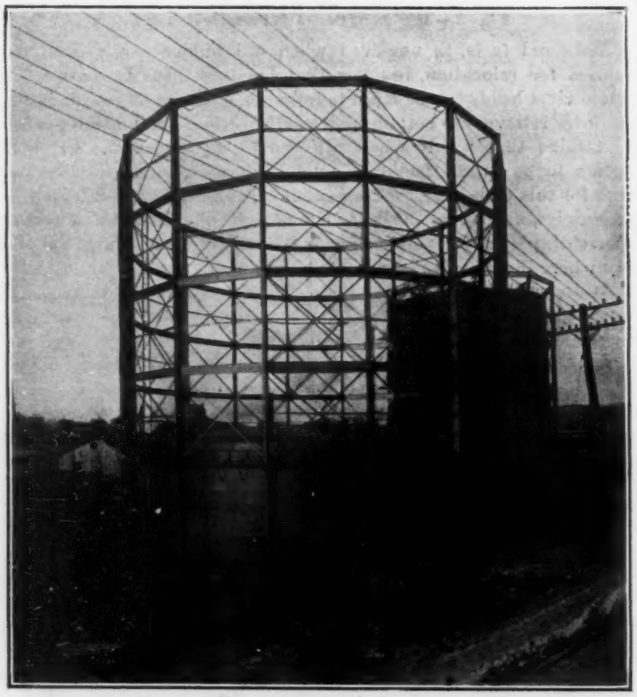

Fig. 5.—Holder Down.

Web Plate Girders.—The 16 standards of the guide-frame, which extend 103 feet 6 inches above the tank deck, are connected by 4 tiers of 30-inch web plate instead of lattice girders. Although more metal is necessary, and a slightly greater wind-surface is presented, a stiffer construction is obtained with this design, which is more easily painted than the lattice girders. A comparison of the two types of framing is shown in Fig. 5. This holder was erected in 5½ months, having been completed last December.

[Abstract Report.—Continued from Page 411.]

SIXTH ANNUAL MEETING, NATIONAL COMMERCIAL GAS ASSOCIATION.

Held at Mechanics' Hall, Boston, Mass., Dec. 6th to 9th, 1910.

Second Day—Afternoon Session.

Discussion on the Henderson Paper.

Mr. A. D. Dudley (Syracuse, N. Y.) said one phase of the subject which should be emphasized was that of general publicity. Good service would bring individual supporters, but, in a general way as well, there must be created a friendly feeling between the company and the public. Efforts made by many companies during the last few years to convince the public that they are not a secret fraternity, and that the gas meter is not a delusion and a snare, had been more far reaching than many of them were aware. Antagonistic feeling had been turned to one of goodwill in many localities where the gas company bent its energies to teaching the public more and more about its business that heretofore had been veiled in mystery. The disposition to be friendly with the consumer, the assurance of the company's willingness to explain the whys and wherefores of its business methods, would in shorter time than might be realized tear down the barrier that for so long a time barred public confidence and rapidly dispelled the fears and doubts of disgruntled consumers. The day had passed when heads of utility companies could sit behind sealed doors, not giving an attentive ear to a public that desired to know whether or not their interests were safely guarded. A company's standing in a community was not altogether determined by untiring efforts on the part of the management to advance solely its particular business. Representative men, such as every gas company should have at its head, should play an important part in the advancement of any movement which promised to improve the city itself. They should know the people, and the latter should be made to recognize the former as leaders through active interest in matters that worked for public welfare. Such policy tended to create general good feeling and stamped a company as a factor in any city or town, and both directly and indirectly brought increased gas consumption. The folly of misrepresentation was long ago exposed. The truth alone withstands, and only through a statement of facts could public confidence be won. Tell the people what is being done and why. Publish a series of articles in the press on how gas is made and distributed, conveying to the consumer in such way an idea of the time and money spent on maintenance work, which is done free of charge; emphasize the mass of detail necessary to care for their account each year; explain why it is pursuing a sound business policy, and that it is even imperative at times to make a demand through the unwelcome shut-off notice. Convince the public that you are not treating them unjustly because of your inability to extend gas mains to out-of-the-way places from which the returns would assure no profit. Go as far as you can to convince the public you are dealing with them in a straightforward manner and prove it by practicing such a policy from day to day.

Mr. Bosse wished to say a few words differing entirely from anything that had been said the past 2 days. He would speak to them as that much abused creature, the consumer. As the way of egress was clear he took a chance on talking rather plainly. Being a consumer in the sense of the middle man, a consumer who is brought in contact with the small consumer and the man supposed to supply gas. Problems came to him daily as to procuring the best results for certain work. Nearly 35 years ago he began life carrying water to pipe twisters, and in time graduated into the pipe twisting fraternity, and sometimes was sorry he ever got out of it. One question he would like them to consider when they got back to their homes, and to illustrate it before he asked it he would say that on his way from Pittsburgh he had occasion to call on four different gas companies, to ask what grade of gas they sold. He was referred from one official to another, and he regretted to say he knew as much about it now as before he called on them. One man told him his gas in B.T.U.'s represented 1,400. [Laughter.] His name is not Roosevelt, so he could not consign him to the Ananias club; but when he thinks of the ordinary consumer asking the gas man how much gas it would take to do certain things, and then be referred from one inferior official to another until finally he had a chance to sit and cool his heels for from 3 to 4 hours before he met the big "I Am," and then have the latter look rather insulted because so unimportant a question was put to him. How many men to-day in the commercial department knew what it was they were selling? How many men could answer the average man who asked as to the best burner to use for certain purposes when those purposes were explained? On a contract installed by us for less than $1,000, under the advice of an efficient engineering staff connected with a gas company, we spent $250 buying burners suggested for use. Finally they spent $10 in their own shop and got the right burner. It was easy to moralize or listen to moralizing over the best thing to be done, and it was usually pleasant to pat the other fellow on the back, whether right or wrong, making him feel he was really a big fellow; but the thing was to begin, as their honest friend on the other side of the hall suggested to-day, to improve as much as they knew how from the inside. If the big fellows were as accessible to the average man who wanted to see them, not only for their own benefit, but possibly for his, they would

probably reach a closer, cleaner, nicer relationship with the fellow who looked on everything connected with a corporation as being antagonistic, or something he was bound to vote against when it was necessary to vote. He knew they probably thought he had no right to come before them and make such assertions, but as a manufacturer of a gas range or a heating device, it was his living to work with them hand in hand. Sometimes they knew it was wise that the surgeon's knife be applied, since possibly a cure was effected, and he didn't want to say anything that would hurt, but he did say, before they blamed their salesman, or maintenance man, they should look just a trifle towards the cleaning and sweeping of their own door yards. See how nearly they were able to judge what should be done by the other fellow. He spoke as a salesman, consumer and manufacturer. He had run the gamut and rang all the changes. He had denied and cussed, but he he would say that was the first time that he stood before a body to which he was so diametrically opposed as he was now. Those present followed the teachings of theology, and ever since he was a small boy he had been taught to dread heat here and hereafter. His line, however, was not heat at all, except as that it would produce cold. He did not wish them to think he was a cold proposition, but he did want them to think that the business methods they expected their salesmen to use should also be expected from the other fellow. It was an easy thing for them in their offices to say their salesman shall do this, but when the complaint which ought to go higher up came along how difficult it was for the complainant to get to you? The Crane's, of Chicago, issued an order when the magnificent new building was being erected for their use, that there should not be a partition in the building, declaring the man either ashamed or afraid to be seen had no businsss at any desk, so that a caller handing his card to the boy could know whether or not the other fellow was in. If you did not want to see anyone send word you are busy, not that you are out, and if one is in there is no necessity for the partition. The time of the travelling or the average business man is as valuable as yours. He can't afford to sit, waiting from 1 P.M. to 4 P.M. and then go home. He wished to emphasize the statement made the day before by their friend from Atlanta, that the right thing to do was to get the best of everything. Someone else suggested that no servant wanted a silk dress, they wanted calico; but that friend probably did not have much to do with servant girls, else that assertion would not have been made. As to your salesmen and maintenance men, get the best. Then they will not need so much card system, nor so much indoor work with your $5 clerks. The public will understand you better, they will come closer to you, and perhaps the lion and the lamb will lie down together, the lamb, to reverse history, not being inside the lion. [Applause.]

Mr. Scherck hoped they would pardon a personal reference. About 15 years ago he was associated with electric light companies, for the last 7 or 8 years with gas companies, and he noticed that men in the gas business had not paid like attention in their relations with consumers as the electric light people had. In the early days of his business career he was glad that they did not, for it was a fairly simple matter to take business away from the gas companies on that very account, and why the gas men so acted he had never been able to determine. His earliest recollection of a gas company was as a young man when he went to pay the gas bills of the house for his father. If he happened to be a day late, perhaps the morning after the 10th of the month, he was met at a grating by some fellow grown old in the service, who said, "You should have come yesterday. You can't get the rebate." He would reply, "That is all the money I have, and I don't want to go back. It was my own negligence. My father gave me the money yesterday." Then came the reply, "We will have to cut off the gas." That was not an isolated case. In travelling for the syndicate with which he associated, he had occasion to visit many offices throughout the United States, and found that that condition, even to recent years, prevailed. He was sorry to say in some places it still prevailed. Right here he would mention a point once brought up at a meeting of a very large electric light association, and he thought all present would vote to agree with the man who made this appeal: "For heaven's sake, take down that grating by your cashier's window. Don't have your customer poking his head through a little hole there, as if you were afraid he was going to steal the 20 cents lying beside the cashier." They would not steal it, and if it were stolen once in a while he still thought they could afford to give up the grating. Don't meet a man right away in the attitude that he is a thief; for he was not, any more than they were. At the outset of the paper it is remarked that the jokesmith does not to-day secure the smile that he formerly did when dealing with the gas company, the gas man and the gas meter, and the statement was perhaps made because the jokesmith found it easy to crack all sorts of cheap jokes at the gas companies; one reason perhaps being that the gas companies had in a great many places looked out for cheap men. He did not believe they had employed in their commercial affairs a like grade of men that had been employed in the electric light business. In the latter the companies sought the best available talent. College graduates were plentiful there and they counted. In the gas business a man without training was employed and he was expected to do wonders. Don't misunderstand me as saying that a man must necessarily have a college training to be an educated man, no matter where he got the education. The electric light companies went out to get trained men, and the college offered the easiest, quickest way of securing such. He advocated as much liberality regarding the payroll as possible. Sufficient inducement would get the men. Don't, as was named yesterday, offer about $20 a week. A salesman, commercial representative, or whatever name you designate him, has a right to marry and bring up a family, and in these days of high cost of living don't expect them to do all this on $20 a week. Large manufacturing houses are looking for trade salesmen, and it was not an infrequent occurrence for salesmen to make from $3,000 to $9,000 a year, because they were, to use the phrase, delivering the goods. In almost any community the gas company was as important a concern as any other manufacturing propositions or industry. He thought they should pay a man his worth, and $20 a week would not get the right sort. As to prompt execution of orders. Don't put young boys on the telephone to answer complaints, and the position of telephone boy was an important one. In fact, it should be the telephone man, not the telephone boy. The operator should be able to answer intelligently and give a consumer an idea that was reasonable; not simply, "I will take it down," or "This will be attended to," and perhaps forget it. The information bureau is an important branch, but there, again, he found, in going around to a number of gas companies, that many had information bureaus. He had gone purposely to other companies to ask, "What do you charge?" "What are your rates?" If it happened to be simply $1 gas or $1.20, nobody knew anything about it; there was a sort of hurried conference, until the information man finally said: "Well, the contract agent is not in, but if you leave your name I will the get information to you." The gentleman from Pittsburgh gave them a very good idea when he said, we must put ourselves in the customer's place. To the great majority of people the man who acts as your commercial representative is a bigger one than the general manager. He knew that, for having acted in that position years ago he perhaps gave the impression that he could always take care of their complaints and would gladly do it, and so on. He was quite sure when he held that position he was simply a solicitor. But the people of a city of some 300,000 inhabitants really thought he was it. Letters came addressed to him as the manager, and so on. They got the idea that the man who represents you is the big man or certainly the spokesman of the concern. So don't send around a man unless he is competent. Again the paper says, "Too much care cannot be exercised in rendering bills, for a customer's confidence is soon lost if he has reason to believe his bill is not accurate." He trusted the Chair would not consider him out of order in simply referring to the previous paper, which he did not think got the attention it frankly deserved, respecting the reference to many cards, etc. He would say, of course, there was a reasonable view to take of that. He didn't believe in getting cards and never using them; but the danger was if they get too few they would not know what they were doing and things would be lost sight of. They might consider it expensive to check bills, for instance, yet he knew of companies that didn't even check their bills, saying it was expensive to do it. But, then, how much was it costing you not to check them? He also found the statement, "Everyone employed in or about a gas office should be polite and courteous. It costs nothing." But, stop a moment. It costs much to bring an organization to the point where all these things could and would be done; but it is well worth the cost. For instance, "Completeness of reply is only half of courtesy; the manner of replying is the other half." He had seen letters written from different offices that a business house or even the owner of a corner grocery would be ashamed to mail. What was the remedy? He thought not to look right down the line for men only because they could be hired cheap. Another point: He would like to ask which point he thought had a bearing on the paper. To inquire if anyone present had experience in bringing about greater co-operation between the various departments

of the companies, especially in combination companies, or, if connected with street railway organization or similar properties, by other than the strictly commercial representative to aid them in securing new business or to bring to their attention consumers' complaints. He knew it would be of interest to him as well as to others if a statement of such experience be given respecting the methods followed and whether or not anyone had, through commissions or rewards of any kind, stimulated that effort.

Mr. Blyler, as a sub-editor of the paper, answered the last question by saying they made it a point to solicit the place. They promptly took care of all the complaints that came to the office, and the demonstrators were instructed to bring in all complaints regardless of seeming frivolity. Complaints out of the ordinary were often taken up personally by the business department. In a year they picked up 6,000 complaints that consumers would not have given them without questionings. They thought they were on the right track. The consumer should necessarily be educated, and it should not be necessary to go to the general manager; yet the general manager or the man who has charge should impart information to the representatives of the company, so they would be enabled to impart information to customers. For example, a customer wanted to know the quality of gas he could get. If the quality were 600 heat units, the representatives should be able to tell the customer what 600 unit gas was, or what 1 unit was, and what was required to make a heat unit. The man buying a gas engine should be told it took 11,000 heat units to develop a horse power, and if the gas had 600 B.T.U., he should be informed as to the simple mathematical operation necessary for his information. He was reminded of a story that was perhaps pretty odd. A travelling man sent a card in to a general manager, who threw it into the waste basket and said, "I have no time to see him." The messenger returned with the reply and the travelling man remarked, "I am a little short of cards and would like to have mine back." The messenger asked the general manager for the card and the latter said, "I haven't the card; here is another." The messenger on going back to the travelling man said, "Get another card; here is a nickel!" The one on the other end always had some feeling, and if approached properly would do his share. Once we found that a number of meters did not register. In every case the consumers were seen personally, the matter was explained to them and the bill of each was adjusted. He thought the meat of the proposition was the salesmen were neither properly posted nor educated. Many new business concerns had what is termed a school of instruction, and men could not learn things unless they were taught. Some lacked ambition, but right through the organization they would find one man who would devote half an hour's time each day posting himself on what he was selling. The other day he asked a salesman, pointing to a fixture, "What kind of a fixture is that?" "It is a gas fixture." "What is the finish?" "Green." "What kind of a shade is that?" "It is a colored shade." "What kind of a frame has it?" "A brass frame." "And what is the price of it?" "The price is $35." All he knew was the price. I said, "Do you know that is is a rare antique fixture? The shape is Argand, and it has very strong talking points. It carries 4 junior burners, and the consumption is so much. He added, "If you had known all those things that fixture would not have hung there for a year." They could not expect customers to buy gas without being enlightened. The secret of the whole thing was to get the solicitors or salesmen together and have schools of instruction. That, he thought, was the meat of the whole proposition. The man on the ground should be able to impart information without having to go higher up.

Mr. McLeod thought one difficulty all gas companies were apt to have was that their man at the order book, the man who took the meter application, was apt to take too much for granted. He was apt to assume that the prospective consumer knew as much about the business as he did. A consumer makes application for a meter. He may want a stove connected, or a riser connected, or some lamps, and in a great many cases he was apt to think the signing of the meter application would do it all for him. Unless the man gave that information the consumer was apt, after getting his meter, to sit around 4 or 5 days before he 'phoned to know why his stove had not been put in. On looking it up you find no order was put in, although the consumer tells you he signed at the window to have that done. That not only makes trouble with the consumer, but it increases the shop cost. In many orders a man goes out to put on a lamp, only to find there is no meter; again, having gone out to set a meter, he finds the riser was not connected. To overcome that difficulty all orders were stamped thus: Setting meter? Service? Is the riser connected? Is the stove connection in? Every bit of this information the shop foreman should have before sending that order. Each of their salesmen and desk men knew that unless he obtained that information and handed it in on his sales order the works order would be returned and his work would not be finished. That made him eager to find out all necessary information which saved a lot of trouble.

Mr. Atwood said they had recently started a school in Syracuse. Having found that, in the conversion of the coal pile in the works, the men in various departments were not efficient. Not doing exactly what they were supposed to do, a school was started, giving 2 hours a week to teaching different propositions respecting the business. They had gone over the rate proposition and taken that up at one time. They went over the construction of arc and reflex lamps, so that if a salesman on his territory sold a lamp that was not operating as it should, he could adjust it, putting it in working order, without necessitating a call from the complaint man to enter the shop, which meant delay. He believed the matter of education was of great importance, and that they should start right at the head of the organization, going from him to the office boy, making known to all the operation of the company, not only in one department but in all divisions. He found that salesmen were not familiar with matters the distribution man was up against, the fitter did not know what the salesman was encountering, and they oftentimes found they would get a service into a building without a meter application; that if the meter was set and the fact that the riser was some distance away, or was not handy, was not reported, so the consumer came into the office with his complaint. If they could show the men the necessity of reporting each and every difficulty noted towards hindering the completion of the work, he thought they would get better results from the men and thus give better service to the consumer.

Mr. Wirt asked if the gentleman who talked of the commercial manager had charge of the shop department of his company?

Mr. Atwood replied that the distribution department was under control of the general manager. The commercial agent and engineer of distribution worked together and consulted on different propositions.

Mr. Beakes asked if anyone present had experience with other than trained employees in soliciting business, and whether or not any reward in the form of commission was offered for this; or, whether or not, it had been extended to other employees of the company.

The President suggested that Mr. Henderson could answer that question with the others.

Mr. Henderson said he thought paying rewards to all employees of companies for securing business was in vogue with the New Orleans Railway and Light Company; also, in Denver at one time, and in Utica, N. Y., where the different employees were paid whatever they might be worth, depending upon the kind of tip, as they call it, brought. He did not believe he could add anything to what had been said.

The convention was declared adjourned, to reassemble at 10 A.M., the following day.

Third Day, Morning Session.

The convention reassembled at 10:30 A.M., President Wrightington in the Chair, who called upon Mr. A V. Wainwright, of Philadelphia, Pa., to read the paper on

INDUSTRIAL FUEL.

It has often been said that selling industrial fuel gas is quite different from selling domestic fuel gas, for, instead of a range and a water heater, there are hundreds of different appliances, each requiring special construction and special attention. If it were literally true that the entire industrial gas business was a special proposition from beginning to end, many of even our largest companies might well pause and consider before taking up so serious a financial burden.

A few years ago the entire industrial fuel business might have been called a special proposition, but such progress h s been made by manufacturers in building appliances and burners adapted to the more common uses of gas that a very large part of the field can now be covered with a line of ready-made appliances. So rapid has been this progress that many companies are still installing home-made appliances instead of those which can be bought in the open market more cheaply, of a better design and with a much better efficiency.

Each step in the manufacturer's progress means much to the gas man. To the larger companies, it means that the money and energy formerly spent in designing and building these appliances can be spent in pushing the sale of the entire line and in reaching out for new uses. To the smaller company, it means the opening up of

great fields of promise which would otherwise be closed to it by the prohibitive expense. For those companies who have not yet opened their industrial fields to any extent, it means an opportunity equal to that enjoyed by only the largest companies a few years ago.

The immense amount of gas now used for industrial purposes is indisputable evidence that the field of industrial gas holds great rewards for those who choose to work in it, even though they may be limited to the few lines of the simpler appliances. It is possible to secure many million feet of industrial gas consumption, by the installation in large numbers of a few very simple appliances, which any man who can sell ranges and water heaters to domestic consumers will have no trouble in handling. By adding to this line of appliances a few forms of special burners in the various sizes, ready to connect, another field as large as the first can be opened.

"Get the easy business first" applies to the highly specialized industrial fuel department in the large city with as much force as to the small city with but one man. Many of the large companies cannot begin to show the results achieved by some of the smaller companies in this line, because they have had such a wide field of special work to cover that they have had no time and attention to devote to the intensive cultivation needed in developing this easy business.

There was never a time when the industrial fuel business was as highly specialized as it is now, nor when the specialist in this line needed to be such a thoroughly trained man. A few years ago he was able to handle all the industrial fuel business himself. But there are now so many lines and so many prospects in each line that it takes many men to handle the industrial end of the gas business. This means that the industrial fuel engineer will not be able to attend to the big end of the business until he has trained the general representatives to handle the remainder.

In every city there are restaurants, tailors, cleaners and dyers, butchers, home-cooking establishments, bakeries, barbers, laundries, boarding and rooming houses, coffee and peanut roasters, candy stores, iron works, machine shops and foundries, besides every conceivable kind of a retail store. The total number of industrial prospects to each 50,000 of population will run not far from 2,000, of which the classes of business named constitute over 90 per cent. Every one of them is a prospect for a hot plate. The restaurants all need coffee and hot water urns, a cake griddle, steam table, at least a small gas range and a dish warmer. The larger restaurants and hotels need a broiler and a bake oven. An average from several medium-sized cities shows 13,000 feet per month from restaurants, without any special development along the line of large ranges, broilers, steam tables and bake ovens. Tailors using tailors' stoves are good for 3,000 feet a month. Cleaners and dyers can use tailors' stoves and pressing machines, besides special burners for vats and dry-rooms. Their consumption is from 5,000 to 30,000 feet per month. Butchers' rendering furnaces, 5,000 to 10,000 feet. Home-cooking establishments, ranges, water heaters, bake ovens and steam tables. Bakeries—bake ovens, doughnut fryers, ranges. Barbers—water heaters and sterilizers. Laundries—laundry stoves, gas heated machinery, puff irons, etc. Boarding and rooming houses—ranges, water heaters, bake ovens. Candy stores and factories—candy furnaces, batch warmers, table and chocolate warmers. Coffee and peanut roasters—roasters and extractors. Iron works and machinery shops—rivet heaters, tempering furnaces, etc. Foundries—brass melting furnaces, core ovens, mold-drying burners.

With one or two exceptions, well-built and efficient appliances to fit each of these uses can be obtained from the manufacturers. A line of these appliances installed, ready to demonstrate, shows the prospective consumer just what sort of an appliance he is going to get and what it will do in actual operation.

Familiarizing the general representatives with this line will enable them to sell the majority of these appliances with very little assistance. In the case of the more special of these appliances the first installations are planned and installed by the industrial fuel engineer. After the first installations have been made and they have been proven satisfactory they become the best possible arguments for closing other sales. Each sale made becomes a stepping-stone to the next one. Soon the main work of solicitation no longer needs the personal work of the specially trained man, but his supervision only. As the special salesman progresses with his prospects, he will find many uses for gas for which he can find no ready-made appliances. Often a combination of burners will do the work. If that is too much of a makeshift, then a special appliance will have to be built.

The field for special appliances for the use of gas has undergone a remarkable development, especially within the last two years. Large and small companies alike have been applying gas to new uses at an astonishingly rapid rate, so rapidly, in fact, that the commercial, the inspection, maintenance and the distribution departments, through lack of experience, have been entirely unable to keep pace with progress. Individual customers have been obtained who consume as high as ½ million cubic feet of gas per month. The obtaining and holding of so large a consumption as that is necessarily a highly special proposition, requiring special appliances, special ability in business getting, special service and commensurate rates. The big end of any business is invariably the most attractive end, but it is also true that it is the hardest business to get and to hold.

Nearly all special appliances are designed to obtain a large monthly consumption of gas. In order to get and hold big business like this, the consumer is educated to figure the value to him in dollars-and-cents of the superior service of gas and its convenience, cleanliness and adaptability, in such a way that it will more than offset the higher gas cost per heat unit. Conspicuous examples of places where this method of figuring gives gas a wide margin over any other fuel are:

Where heat can be taken to large work, such as in heating and straightening engine frames or in setting locomotive tires.

In coffee roasting, where absolute control and cleanliness are very important factors.

In tempering, annealing, hardening, and in all other processes where careful measurement and perfect control are necessary.

This figuring of service in dollars-and-cents, the rate question, the giving of satisfactory service, the holding of business already obtained and the prospects to be closed in the future, as well as the improvement in the design of appliances, are all included in the subject of inspection and maintenance.

Insufficient, improperly adjusted and dirty appliances are the cause of more high bills than any other one thing. How much better would it not be to avoid the unnecessary attendant evils of faulty operation of appliances than to lose eventually an industrial gas consumer.

Clean, well-designed appliances, economically operated under the personal supervision of a good maintenance man, are right now closing more business by force of example than could be closed in any other way. Get the easy business first, then make the hard business easy by building upon conspicuous examples of satisfactory service. No other man connected with a gas company has the opportunity to analyze consumers' conditions, report prospects for additional business and suggest improvements in appliances as has the appliance maintenance man, who, of necessity, must have had engineering experience.

The making of special rates to large consumers is often more the manner of the rate it takes to get the business than a scientific study of the cost of supplying the required service. More big business can certainly be obtained with 80 than with 90-cent gas, and so on down to a point as low as the manufacturing and distribution expense for that particular business, plus a fair profit, will allow. The hourly demand of the consumer, his total hours' use of the service per month, his total monthly consumption, all figure in determining what his rate should be.

Industrial fuel is the wholesale end of the gas business, in the same way that power is the wholesale end of the electric business. The division of electric power prospective users into classes and the careful analysis of their costs have enabled the electric companies to close any amount of power business which they would have been unable to get without this accurate knowledge of costs. It is inevitable that the large end of the industrial fuel business must be expanded in this way. A basic rate, taken from past experience in other classes of business, with a special discount for quantity, does not meet the conditions of a wholesale business. A method of charging, based upon varying quantities of consumption, with rates that automatically decrease as the consumption increases, has obtained business which could not otherwise be had. A special discount is unnecessary with this kind of a rate, as the largest consumers are always given the lowest rate.

The item of industrial fuel business-getting expense, which often looms large in total figures, is in reality the lowest of all new business expenses, when figured as a percentage of the first year's actual revenue. Domestic fuel business costs to obtain about 75 per cent. of the first year's revenue, while industrial fuel business costs less than 25 per cent. The total maintenance expense, construction and distribution expenses, figure out in about the same proportion.

In spite of these facts, many companies that spend large amounts of money in getting domestic fuel business are devoting little time or

attention to industrial fuel. Several replies received in answer to questions sent out during the preparation of this paper stated that the companies were so busy with domestic fuel work that they had not had time to do much in the industrial line. Every gas man appreciates that $200 a month from one consumer is worth more to his company in net profits than $4 a month from 50 consumers. But when it is remembered that $4 a month is about 33 per cent. more than an average residence customer brings in, and there are besides, $5, $7, $10, $20 and $50 consumers to be obtained in every city, the universal scope of the industrial fuel field can be realized.

In the presentation of the slides, rather than the discussion to follow this paper, will be shown the progress which has already been made in industrial fuel work along many important lines.

(To be Continued.)

THIRD ANNUAL MEETING, INDIANA GAS ASSOCIATION.

HELD IN FORT WAYNE, IND., JANUARY 18TH AND 19TH, 1911.

FIRST DAY—MORNING SESSION.

The President—Gentlemen, it gives me great pleasure to open the third annual meeting of the Indiana Gas Association. It is certainly very gratifying to find so many here at the opening meeting, and to note that so many are with us who are not members of the Association. A year ago, when the Association adopted the minority report of the Place Committee, and substituted Fort Wayne for Indianapolis, I was satisfied they made a serious mistake, but I can see now that their judgment was all right. Fort Wayne evidently was the logical place for this meeting.

INTRODUCING MAYOR GRICE.

I do not know a great deal about Fort Wayne, nor I do not know what the people of Fort Wayne think of gas men, but we have with us a Fort Wayne gentleman who probably can tell you, if he will. I hope we have their good opinion. He may also be able to advise us as to what not to do and what to do during our sojourn here. I take great pleasure in introducing to you the Mayor of Fort Wayne, Hon. Jesse Grice.

THE MAYOR'S RESPONSE.

Hon. Jesse Grice—Mr. Chairman and Gentlemen of the Convention: In my opinion this will be one of the most important conventions that the city of Fort Wayne will have during the year 1911. I am positive that the local gas lighting company can enlighten our people in the future. Gentlemen, you are here to-day representing the gas and lighting interests of the State, and I know, looking over the audience, that every gentleman here to-day who is interested in this convention has come here well prepared—well filled with gas. [Laughter.] I feel you can answer any questions that will be propounded to you during your convention.

It is not only a pleasure, but an honor, to have the opportunity to welcome such a splendid class of gentlemen to our city, and I know I am voicing the sentiment of our citizens when I say that we are highly honored through your having selected this city as the place to hold this convention. Your work in session here will be watched by a great many, and the eyes of the interested from all of your homes will be turned toward this convention, and it is not surprising if upon your session here depends the future of your Association. I tell you I am in hearty sympathy with your noble work. So, wishing your convention every success possible and Godspeed, I again, on behalf of our citizens, extend to you the freedom of our city, with the hope that your stay with us will be both pleasant and profitable, and that when you leave you will take with you many pleasant memories of the people of Fort Wayne. I want to express the further wish that when your convention is closed and you leave our city to return to your homes, and, getting around the fireside by your loved ones, that you will be able to report to them one of the most pleasant and successful conventions in the history of the gas associations of our country. I thank you, gentlemen. [Applause.]

RESPONSE OF MR. DUNBAR.

The President—Mr. Dunbar, will you kindly reply to Mayor Grice's welcome?

Mr. Dunbar—On behalf of the members of our Association and of our President, I wish to express to you personally, and in your official capacity as chief executive of this growing and proud city, our grateful thanks and appreciation for your very kind words of welcome. I have listened to many addresses of welcome, and I wish to say to you, Sir, that I have never listened to one in which the goodwill so emanated from the heart with grateful words of greeting and of welcome as you have extended this morning to the members of the Indiana Gas Association. [Applause.] I am sure, my dear Sir, that we feel proud, and we feel that a year ago, when the minority report of the committee was adopted, that we made no mistake in coming to this beautiful and thriving city of Fort Wayne. Here is a city of which you may well be proud. It dates back its organization to a time when Indiana was a wilderness—when that renowned revolutionary soldier, "Mad" Anthony Wayne, as he was sometimes called, had charge of the Fort at this place and defended the settlers from the raids of the Indians. Fort Wayne, we feel, has partaken of Anthony Wayne's courage, and we feel that as a city you will be as successful as he was in his military career. We are proud to come to Fort Wayne because in your city are our friends and associates. You are distinguished as a city in which you have two of the most progressive manufacturers and builders of gas works in the United States. They have built gas works all the way from Maine to California and from Canada to Mexico. You probably heretofore have not realized the full extent of their industry, for their fame is known and their work is recognized as being excellent wherever gas works exist. We will be here but a few days. Our membership is not so large on account of natural gas having for a number of years been in existence and supplied to our citizens, and because of this our artificial gas industry has not prospered; but we feel that the times for us have brightened, and that, with favorable legislation, and with no adverse criticism or hindrances on the part of the cities, we may be able to grow to become an industry second to none in the State of Indiana, and one that will bring with it many advantages to the citizens of the State. Mr. Mayor, I again express to you our deep appreciation of your greeting, and I am sure every member of the Association will long remember the kind words with which you have met us this day. [Applause.]

The Mayor—Mr. President and Gentlemen, I want to thank the distinguished gentleman who has just spoken. This is the first opportunity I have ever had to be before a gas company's officials. I know I am at the head of our city. I have been placed here by our people. My heart is with the people, but I am not here to drive the gas company out of the city of Fort Wayne. We have to have companies to serve the people, and I mean what I say. I want all industries to come to our city. We have a good city. We have good people in it, and they are the ones who make a good city. Seventy-five per cent. of our total property is held by separate property owners, and I will do anything that is honorable and honest for the gas and lighting company of our city. [Applause.]

Then followed some routine business, which included the disposition of the minutes of last meeting, the Report of the Executive Committee and the Report of the Secretary-Treasurer, all of which action and messages received approval.

The report of the Secretary was noteworthy for the following mention: At the last meeting it was suggested that it had been considered advisable to have fewer papers than formerly, so as to provide a more general discussion of topics of interest to the members. This has been carried out by your President and Executive Committee, so that only 5 papers will be presented for your consideration at this third annual convention. It is fortunate that this provision has been made, as, since the Executive Committee meeting, at which the papers and topics were selected, it was not known that such a comprehensive exhibit of gas appliances, as we find collected in Fort Wayne on this memorable occasion, could have been organized in so short a time. The exhibit will doubtless prove of great interest to the members of the Association and be a worthy example of what can be done along these educational lines. In the name of the Board of Directors, and of every other member of the Association, we have the greatest pleasure in extending our heartiest thanks and commendation to the Indiana Lighting Company, of Fort Wayne, especially to Mr. S. E. Mulholland, the local Manager of that Company, and Vice-President of our Association; to Mr. O. O. Thwing, of the Western Gas Construction Company, and to all those manufacturers, their representatives and others who have contributed to this movement, for their valuable co-operation in making the exhibit so complete a success.

The President—There seems to be no special committees (except on Entertainment), and they are not quite ready to report. I understand, however, that they have planned some entertainment for this

evening, and in order that the members may be able to attend the entertainment and also to secure cards for the Elks' Club and the Commercial Club, it will be necessary for all members to register before these can be given out. I will now announce the Committees on "Nomination" and also "Place."

Nomination Committee.—Messrs. F.W. Freese, Fort Wayne, Chairman; G. M. Dolley, Peru; F. M. Loomis, Indianapolis; A. S. Cooke, Terre Haute; H. D. Hayden, Valparaiso. I wish this Committee would get together and report in time for the session to-morrow morning.

Committee on Place.—Messrs. J. W. Dunbar, New Albany, Chairman; Clements Blank, Martinsville; W. I. Battin, Fort Wayne.

The President asked Mr. Dunbar to take the Chair, and the former read his

ANNUAL ADDRESS.

[For the text of the Address, see JOURNAL, *ante*, p. 147.]

Mr. Dunbar—Gentlemen, you have listened to the reading of the President's address, which contains much of practical importance to the commercial department of the gas companies we represent. It is customary on an occasion of this kind to refer the President's address to a committee for report, and if there is no objection to the usual procedure, I will refer it to a Committee consisting of Messrs. A. S. Cooke, of Terre Haute; H. L. Olds, of Newcastle; W. C. Steinwedel.

The President—Before starting the regular programme, I wish to again call your attention to the announcement made by the Secretary in reference to an amendment to the Constitution. According to the Constitution and By-Laws this amendment is announced to-day and will be voted on to-morrow. By it the retiring President becomes an ex officio member of the Executive Committee for the ensuing year. I wish further to state that another amendment, in reference to membership, has been proposed. Our present Constitution provides that, to be eligible for active membership, a person must be "an officer, stockholder or an employee of a gas company in the State of Indiana." The amendment proposed contemplates striking out "stockholder." I simply make the announcement now, so that you will be prepared to discuss the amendments and vote on them to-morrow. It gives me great pleasure to announce that we have an addition to our programme. We are very fortunate in having with us during the session Mr. Norman Macbeth, of the Welsbach Company, who has kindly consented to give a talk to our members and other lighting companies, and to the architects and engineers of this city. In order that it may not interfere with the other work of the convention, that talk will be given to-morrow morning at 9 in this hall. We will now have the paper by Mr. Philmer Eves, of Indianapolis, on

THE VALUE OF INSTRUCTION IN THE OPERATION OF GAS APPLIANCES.

In considering this most important topic three fundamental points should be kept well in view.

First: The question of the selection of gas appliances that give efficiency and economical service is one of the prominent factors of this instruction problem.

Secondly: Where any kind of gas appliance is sold the consumer should receive careful instruction, in order that the best service at the smallest operating cost may be secured in the use of the appliance.

The third point is that this instruction, a considerable expense to the gas company, is a paying investment, as it results in the proper use of the appliance, increases the gas output and reduces the work and expense of the complaint and maintenance departments. If a sale ends with the taking of an order there will usually be two consequences. The purchaser, not fully understanding the appliance and its economical manipulation, will either make mistakes, fail to get the best results, waste gas, or become dissatisfied and be a "kicker" instead of a contented friend and advertisement for the gas company.

In the second place, the consumption of gas, to attain which the proper use of the appliance should contribute, will not be assisted by the sale. There is, therefore, no subject that could be more profitably considered than this, "The Value of Instruction in the Operation of Gas Appliances." To bring out the fullest benefit from the consideration of this subject there should be, and we are sure there will be, not only an earnest interest in the subject itself but a determination to deal with the matter as one of the great problems of our business. In dealing with this educational work the writer has had peculiar opportunities and considerable experience. It has been one of the problems to which we have for many years given earnest thought and successful effort.

There is now no other policy in the gas business so universally recognized as that of giving the very best of service to gas consumers. A high quality of gas, in candle power and heat units, the handling of only the best gas appliances, profound attention to the complaints, justified or imaginary, of the gas consumers, and the dissemination of information and honest advice, are the acknowledged essentials to the growth of a gas company's business.

It will be readily understood that there is a great preliminary responsibility attaching to the gas company in selecting only those gas appliances, domestic and industrial, that have been proved by careful and exhaustive tests to be efficient, durable, faultless and economical. It has unfortunately, especially during recent times, been made sadly too much a question of low purchasing price. In this connection the gas companies have not been so much to blame as the outside dealers, who are naturally interested more in immediate profit and less in future maintenance than are the gas companies. The essentials of permanence and high quality have been side-tracked to bring in the last per cent. of discount from list prices. Manufacturers have justly complained of this baneful tendency to lower the standard of appliances. To their credit we must frankly say that, while the manufacturers have been thus compelled to cater to this cheap trade, they have wisely continued to produce, and successfully market, goods of the highest standard quality. The wisest gas companies, fully recognizing their future responsibilities, and in their desire to retain the permanent business and goodwill of their patrons, have ignored this cheapness and continue to purchase goods of the soundest quality and efficiency. The gas companies are doing much to check this disastrous demand for cheap goods. As a rule the companies agree to connect the domestic gas appliances sold by furniture houses and hardware stores, as well as the industrial and mechanical appliances introduced and sold direct by the makers. It is here that the gas companies can check and practically stop the sale of low-grade appliance by declining to connect them. This has been made a strong and successful point by Mr. Graf in Indianapolis, where the appliances must be passed upon and accepted as satisfactory before a contract is entered to undertake the connections. A reaction is going on all over the country at the present time, as our esteemed associate members, the representatives of the manufacturers, can testify, and it is coming to be more generally recognized than ever before that good quality, efficiency and economy of operation must be the first and only consideration.

This excellence of the goods purchased gives the gas company assurance that the future expense in demonstration and instruction work will be kept down to the minimum, and that a contented patronage will naturally result from the proper conditions. While with this basis of standard quality of appliances to work on, the problem of instructing the consumer is reduced to its smallest difficulty and lowest cost, there is one other paying feature of this higher standard of appliances that too often is unconsciously neglected. This is shown particularly in the maintenance department. Those who have experienced the necessity, sometimes frequently arising, of repeated need of repairs, of burners needing frequent adjustment, and of appliances failing to do the required work, have discovered to their sad regret that there was more antipathy than friendliness among the consumers towards the gas company. It has been puzzling to know where this discontent and unfriendliness had arisen, and many causes except the right one have been assigned or imagined. It will be well, therefore, to give the strictest attention to the appliances at the time of purchase. It has been truthfully and pithily stated that the consumer who buys an appliance that occasions trouble soon becomes embittered against the gas company, and very often thinks that the gas itself is poor and to blame, while the revenue that should proceed from the operation of the appliance fails to materialize.

The instruction or education department, as it may be termed, is necessarily divided into two branches, especially among the larger companies, the "domestic" and the "industrial." We will consider, first, the domestic side of the problem, to many unfortunately the only one considered at all. A year or two ago the writer secured statistics relating to this instruction problem, or, as it was called, "demonstration work." Out of 33 large gas companies from which the data was collected, one company began to teach its consumers by means of demonstration as early as 1879; 11 others began in the years from 1884 to 1889, and 21 began in the early nineties. There are few of the gas companies operating now that do not employ these instruction agencies, although many have delayed commencing the work until very recent times, and some few companies have not begun at all. The work has been carried on by various plans, with

some of which you are familiar. The expert lecturers, the graduates of the domestic science schools, the "lucid stars" of the profession, have done wonderful work in creating a national and local demand for domestic gas appliances, in developing methods of economy in gas consumption, in making known the values of food products, in hastening the adoption of the pure food laws, in improving home conditions, uplifting women from drudgery to comparative freedom and easy living, and in showing the gas company, in the eyes of the public, as a friend of the public, a benefactor of the people and an honored and respected business institution. The women instructors, formerly named "demonstrators," who visit the homes and give "first aid to the beginner," who contend with inexperience, teach the ignorant, make cooks out of undomesticated "newlyweds" and good cooks out of ordinary ones, who prevent unconscious waste, dissatisfaction and dissolution of partnership between the gas company and its pupil patron, those plodding instructors who live among kitchen blunders and old-fashioned prejudice, and produce for their company, out of an over-persuaded convert to gas, a contented and delighted consumer and "a tongue that telleth things to the neighbors," are producing results and increase of business undreamed of in the earlier days. From statistics taken from the instructors' reports in Indianapolis during the last few months we are able to see the great value of this instruction work. It is well known that where a consumer, an inexperienced woman, is left to her own devices, say, with a gas range, it is comparatively seldom that the baking oven, and more seldom that the broiler is used, and that the gas range sold is not the revenue producer that it should be and could be made to be. The figures from our reports, however, show a very different state of affairs. Out of 1,858 cases visited during the period under investigation 92 per cent. of the women were using the broiling oven, and 99 per cent. used the baking oven. These may be considered high percentages, but they are true ones, and they go far to show what can be accomplished if these problems are properly dealt with. There is incidentally another pleasing feature which probably has seldom been thought of in this connection, and that is the value of instructors as a means of securing the sale and use of additional gas appliances. This feature is shown in the same reports, from which it is seen that in no fewer than 31 per cent. of the cases under consideration, sales of gas appliances, consisting of kitchen heaters, toasters, iron heaters, waffle irons, cake griddles, domestic gas irons, and other gas using goods were made. Part of the cost of maintenance of this instruction department, therefore, could well be charged to the canvassing or new business department, although it is not recommended that the women instructors should be looked upon as saleswomen. Our written instructions to these women educators may prove of service to other companies, and we, therefore, give them in the following summarized form:

1. The gas company desires that all purchasers of a gas range should understand how to use the range so as to produce the best results economically.

2. Many who buy a gas range have had no experience whatever in cooking with gas. Others have used some kind of a gas range before, and to those a new gas range will be more or less an experiment.

3. It is important that patrons be fully convinced that they will be assisted and advised so as to get the best gas service with the least consumption of gas.

4. The first thing, therefore, is to secure the confidence of the customer.

5. Explain in each case the object of the air mixers, which provide the most intense heat at the burners with the smallest consumption of gas, and be sure each patron understands that the lower oven is for broiling, the top oven for roasting and baking. If using one oven and not the other the heat of the idle oven may be utilized for cooking almost every kind of vegetable, after they have been brought to the boil on one of the top burners. Never allow the oven heat to be wasted.

6. To prevent rusting, advise that the doors of both ovens be left open for 1 minute after lighting the oven burners, and also for at least 15 minutes after cooking or baking.

7. Advise that the oven be first properly heated, and that when the baking is placed in the oven the heat may be turned down. This will prevent burning and unnecessary waste. In baking, the gas may be turned entirely off before the baking is browned. The heat retained in the oven will "bake out."

8. In every case be sure to advise that the gas be not allowed to escape into the ovens before lighting. This will prevent explosion and expense; but never mention the word "explosion" to a customer.

9. Should a purchaser suggest the changing of a gas range to some other kind, show her that the range sold to her is satisfactory in every way, as changing stoves is not the cure for failure to get good results.

10. Show that while the gas pressure supplied is sufficient to supply all the burners of the range at the same time, if necessary, it is not advisable or necessary to use the full force when only one or two burners are being used. This will prevent extravagance and complaints of high bills.

11. Show the waste of gas and heat when the flame is allowed to lap over the sides of a vessel.

12. Explain the economy of relighting burners rather than allowing them to continue lighted when not in actual use.

13. Draw attention to the simmering burner and explain its efficiency and economy.

14. In showing the proper use of the ovens, point out that the circulation is so perfected that the two ovens may be used at the same time, thus saving time, labor and gas.

15. Recommend that, if any trouble is experienced with the burners, or if any other part of the stove becomes faulty or needs adjustment, a report be made to the gas company at once, when the complaint will receive attention free of charge.

16. Point out the saving of gas by having everything ready to cook before lighting the burners, and also advise that the proper size top burner be used according to what is being prepared.

17. Explain the economy of using the double or triple saucepans, which cook 2 or 3 dishes over 1 burner at the same time.

18. If the customer is not using a toaster and an iron heater, try to take an order and have these useful articles delivered, as they help to economize gas.

19. Never say anything for or against any other kind of gas range than the one in use.

20. Suggest the desirability of keeping the gas range, and especially the burners, always clean. The burners, as a rule, are made removable so that they may be cleaned from time to time by placing them in hot water and common soda, which removes all grease and keeps the orifices open and unobstructed.

21. Before leaving, secure the goodwill of the patron, and endeavor to gain her co-operation and recommendation, so as to secure further sales of gas ranges among her neighbors.

22. Use every opportunity which may present itself to make a sale or prospect, as, for example, when a neighbor happens to be in the house, or where a neighbor or friend is recommended as a likely customer. For this purpose always carry a few blank order forms and application cards. Leave whatever circular or other advertising matter you may consider might be useful in each case.

23. Never consider or discuss any complaint against a gas bill. Refer the customer to the complaint department at the office, where the complaint will receive careful attention.

24. Always advise the customer to call in our gas stove department, when paying the bill, or the neighborhood, so as to keep in touch with the latest ideas in gas appliances.

25. Where a gas stove patron is not using gas for lighting, try to influence her in favor of gas, and if used for lighting and the gas lighting burners are not satisfactory, recommend burners that are more efficient and economical.

26. Advocate at every call the convenience of keeping the gas range connected ready for use all through the year, so that the fullest use of the gas range may be secured in winter as well as in summer. If the kitchen is not heated from a furnace, recommend the kitchen heater and leave a circular describing it.

27. Inquire in each case if the gas water heater is in use, and if not, explain how handy and economical it is to obtain hot water by means of the gas water heater sold by the company.

28. Above all, leave our patrons pleased and contented so that they may use gas intelligently and be a good advertisement in the neighborhood.

The gas office exhibits, demonstrations, cooking lessons, baking contests and displays of cookery, are all established agencies that work together for good; that teach the lesson of confidence in the gas company's ability and determination to buy and sell only the best; that help mightily in the work of instruction and in developing the service of a gas appliance up to its fullest use and in curtailing complaint expenses.

There are other fields into which this educational campaign can profitably be carried. Most of the members of this Association are familiar with the work which has been prosecuted assiduously for a number of years in Indianapolis. In 1 month, cooking lectures were given to large audiences that were collected in no fewer than 19 of the city churches, school houses or parish buildings. Courses of lessons have been and are being given at the hospitals and charitable institutions. In one of the latter a course of 14 cooking lessons was given. Within 6 months of the close of the course, 32 girls who attended the classes went out as servants in homes, and here is the testimony of the superintendent of the institution in question: "You are doing a great work, but you cannot fully understand, as we can, all the good you are accomplishing, and the great value to the girls and to their employers of the instruction you have given." The trained nurses of the hospitals are taught to manage the gas range

and to prepare suitable foods for the sick, and all this instruction work has tended to bring kindly feelings, friendliness and patronage to the gas company, in addition to assuring the proper use of gas appliances and the minimum number of complaints.

In some of the districts where there is not a public school domestic science class, our company is giving courses of practical instruction in cookery. The pastors of the churches and the principals of the schools where these courses are given, publish notices from the pulpit and among the parents, thus producing the largest and most respectable classes, and reaching gas consumers in the largest numbers and in a more wholesome way. The good work is kept up and additional use of gas cooking ranges is secured by the giving of cookery recipes. This is done each month and is greatly appreciated by the patrons, whose home conditions are thus benefited, while the gas company is reaping goodwill and increasing its gas sales.

If these women officials can accomplish so much good, increase the economical use of gas appliances and elevate the gas consumers to the class of satisfied patrons, it has naturally been asked whether the gas company's salesmen or solicitors cannot beneficially co-operate in this instruction work. A little over 10 years ago, in a city in the East, we formed a cooking class for the staff of solicitors. The course of instruction extended over 2 weeks and enabled the men afterwards not only to talk more intelligently about gas cooking appliances and to secure a larger number of sales, but qualified them to deal with the more common experiences and difficulties of their gas range customers. The same instruction has been given to our salesman in Indianapolis with the best of results. This class of work has been carried on by demonstrations of the ranges and by practical cooking lessons in the solicitors' department. At the evening meetings, at our prize distributions, little dinners have been cooked with gas for the men, to stimulate enthusiasm for gas cooking appliances. This instruction to the men has been more fully handled and other goods have been dealt with by means of supplementary instructions called "Arguments that produce and retain business." These persuasive arguments, while not offering instruction directly bearing on the operation of appliances, but rather on their sale, will be valued by the members of this Association as being part of the instruction which salesmen, as well as the women instructors, should always be fortified with in their daily rounds. Briefly summarized, they are offered in a supplement to this paper for the benefit of those of our members who might care to adopt them for their employees.

Just as instruction is systematically given in the use of gas ranges, so it is deemed absolutely essential that proper information be given to gas consumers who purchase any other appliance. Misuse and extravagance, in the operation of the gas heater for example, can be prevented by frank and timely caution against burning the gas in the heater except for occasional and supplementary or emergency service. If the consumer is allowed blindly to burn the gas 24 hours a day, innocently believing that gas used exclusively for house heating is practical and economical, he will, on receiving his first winter month's gas bill, be apt to state that there is "a mistake somewhere," and decline to pay the bill. The same reason for definite instruction applies to all other appliances of a domestic character, and it is principally through the office salesmen and the solicitors who take the orders that waste of gas and dissatisfaction can be prevented. The salesmen, therefore, should be carefully trained and instructed in this respect.

Hotel, restaurant and club installations are classed under the head of industrial appliances, but these receive, in Indianapolis, the attention of our women instructors, who are best able to give the hotel proprietors and cooks the necessary instruction that will secure the economical management of the larger ranges, bake ovens, griddles and other apparatus of the kitchen. It is sometimes a delicate problem, requiring tact and perseverance, to bring the expert chefs and men cooks to see the importance of properly understanding the many means of saving gas, but when it is shown that with the correct and economical manipulation of the heat there is not only a saving but improved results, the clever cooks are generally willing to receive this all-important and customer-retaining instruction.

One of the most serious necessities for instruction and advice is occasioned by the sadly wasteful and careless use of gas, both in residence and business places, for lighting. The bane of the peddler of extravagant burners and the use of old worn-out burners of the older types are felt by every gas company. The remedy here is often an expensive one to the gas companies. It is so difficult, if not impossible in many cases, to persuade consumers that the gas company would recommend gas-saving burners. In all these cases it is advisable to put on, free of charge, improved burners giving the best light with the smallest consumption of gas. This generosity on the part of the gas company is a paying investment, because, while it cuts down extravagant demands on the meter, it gives that perfect service which all gas companies strive to give, wins the consumers' future confidence and goodwill, and advertises the excellence and economy of gas in the neighborhood. In this lighting field the salesman and women instructors can, with the proper direction and encouragement, materially reduce, if not entirely abolish, this detrimental waste of gas used for lighting. The consumers' neglect to renew mantles on the incandescent lamps can also be greatly checked by the salesmen, instructors, fitters and other employees of the company watching constantly for adverse conditions and explaining the superior excellency and saving of gas by proper maintenance of the lights. This provision hardly applies to the use of the gas arc, as the maintenance system, when properly carried out, prevents the waste and inefficiency which would otherwise create a dissatisfied patron and lose the installations for the gas company. Maintenance of gas arcs should, therefore, be an indispensable condition of every installation.

The most difficult, and probably the most important, part of this educational problem, arises with the installation of the more mechanical or industrial gas appliances. What would be the probable consequence if a consumer bought a gas engine, if the company, erecting the engine on the most solid brick foundation, left it in working order and starting it running, should fail to instruct the operator. The tyro, neglecting or forgetting to oil the cylinders, would soon find the piston working under friction and the engine requiring more fuel to do the work. A large gas bill might mean the loss of the customer after the first month's operation of the engine. The essentials of cleanliness, as well as lubrication, must be explained, for if the supply of oil is too generous it will be wasted and deposited on the floor or walls of the engine house. The importance of draining off the oil after the day's run, and the mistake of using this surplus oil, or the oil collected from the floor, owing to the presence of grit and dust, should be shown, and many other essential things that secure easy and faultless running and economy of operation. In the manipulation of forges, furnaces, heating ovens and all the other industrial apparatus using gas, there should be expert advice and information given, not only to the consumer responsible for paying the bills, but also to the workmen operating the appliance. For this kind of instruction work the industrial appliance salesmen should follow up every installation for a reasonable period and instruct the gas company's fitters or other men responsible for making the proper connections. No industrial department, therefore, can be satisfactorily maintained without the expert salesmen, who must be mechanics qualified to give instruction and to handle these mechanical problems as they arise. It is here that the smaller gas companies are handicapped by reason of their territory being too circumscribed to warrant the expense of employing the proper official. This accounts for the failure of many small companies to secure this profitable industrial business. The remedy that will add this lucrative industrial gas consumption to the smaller companies' output will perhaps ultimately be found in the employment, in some central city, of expert salesmen and mechanics who will be available to visit the smaller plants periodically to work up the industrial business and follow up the installations with the required instruction. This may be one of the benefits of a State Association in which the larger gas companies possessing the facilities and the proper men may train extra men to render the necessary assistance throughout the State. A step in the right direction is now being taken by the Eclipse Fuel Engineering Company, of Rockford, Ills. The expert manager of this new department is training a few men to go out among the smaller companies for short periods, the only expense to the gas companies being the salary of the temporary industrial appliance men.

In conclusion we have the authority of Mr. Graf to state that we shall be glad, at any time, to render assistance to members of the Indiana Gas Association in this imperative instruction work, and thus help to develop the gas business and bring about the most perfect conditions throughout the State of Indiana.

SUPPLEMENT.—*Arguments that Produce and Retain Business.*

Gas Range.—Does more and better cooking than the best coal stove. Does the cooking in less time at less cost. Lessens kitchen work. Keeps the kitchen clean and sanitary. Does away with the carrying of coal and taking out of ashes. Keeps the kitchen cool in summer.

If there is no radiator in the kitchen, a kitchen heater will save fuel and keep the kitchen comfortably heated through the winter.

Breakfast may be prepared on a gas range in less time than it takes to light up a coal range.

The gas range burners can be used for ironing, preserving fruits, and many other things requiring a uniform heat.

A cake griddle, toaster or waffle iron can be used on a gas range burner, where they could not be used on a coal stove.

Meats may be broiled and baking done at the same time with the 1-burner flame.

Vegetables and soups may be properly cooked and simmered while the meats and pastry are being done in the ovens.

Gas Water Heater.—Supplies an abundance of hot water at the smallest cost for the bath, kitchen, laundry.

Gives the hot water without the necessity of lighting a stove.

Supplies the hot water through the summer when the house furnace is not in operation.

Furnishes just as much hot water as is needed without waste of fuel and time.

A match is all that is required to light the burner.

Heats all the water in the boiler, if needed, or only just sufficient for immediate use.

Prevents overheating the kitchen in summer.

Instantaneous, Automatic Gas Water Heater.—Furnishes an instantaneous supply of hot water at any hour of the day or night by merely turning any hot water faucet in the house.

Supplies the hot water at the lowest cost and in any desired quantity—a gallon or a bath full.

Does away with the necessity of lighting the burner in the heater, as the "pilot" is always in operation.

No need to re pipe the house. The heater can be connected with the pipes already there.

No expense for fuel, except for the short time the water is being drawn.

The hot water will continue to flow at a uniform temperature—about 140°.

No "liming" with this type of heater, and the copper coils do away with the possibility of rusting or discoloring the water.

Clean, hot water always on tap.

A great boon in case of sickness.

Hot Plate.—A very convenient and economical cooking appliance for small families, where a gas range cannot be afforded or installed.

Does baking, roasting, boiling, frying, toasting, ironing—anything but broiling, if a small portable oven is used on the hot plate.

Handy in the laundry.

Used for coffee and tea urns.

Can be connected with pipe or rubber tubing.

Toasters, cake griddles and waffle irons can be used on any hot plate burner.

Ovens for Hot Plates.—Are portable, convenient and efficient.

Roasting and many kinds of baking can be done at the same time.

Small cost.

Gas Heaters.—Furnish heat quickly in emergencies. It is "heat always on tap."

The gas heater is not intended to supplant the ordinary heating arrangements of the house.

For heat "between seasons," morning or evening, in cold rooms or chilly corners, a gas heater is a handy boon.

For the bathroom, a gas heater is almost an absolute necessity. A warm bath in a cold bathroom is a danger to health and comfort.

Asbestos Grate.—For dining room, parlor, library, hall, etc., is the most satisfactory gas heating appliance known. It furnishes heat quickly, and being connected to the flue in the chimney, is odorless.

Asbestos "fronts" can be furnished for natural gas grates.

Iron Heater.—Saves gas by heating 2, 3 or 4 irons on 1 burner of a gas range or hot plate.

May be used for baking griddle cakes.

Also for heating water in the kettle or simmering while the ironing is being done.

Prevents irons from "pitting."

Toaster.—Saves gas by toasting 4 pieces of bread at once.

Where larger quantities of toast are needed the broiler of the gas range would be as economical.

The toaster is used for keeping the coffee or teapot warm, or as a warmer for foods when cooked.

Cake Griddle.—Is used for baking different kinds of griddle cakes.

The heat baffler underneath the griddle top distributes the heat evenly over the whole surface of the griddle.

Being of very light sheet steel, the cake griddle is heated quickly and is more economical than the heavy, thick griddle iron.

Waffle Iron.—Bakes waffles evenly and in the shortest time.

Is heated and used over one top burner of a gas range or on the burner of any hot plate.

Free recipes for waffles and for many other articles of daily consumption are given away each month at the office of the Indianapolis Gas Company.

Gas Range Saucepans.—In set of 2; in set of 3.

Save gas by cooking two or three vegetables, cereals, etc., at the same time, on one burner of the gas range or hot plate.

If only one cereal or vegetable is needed, one of the saucepans can be used.

The set of two or three saucepans often prevent the waste occasioned by allowing the gas flame to lap over the sides of the cooking vessel.

Gas Irons.—Used either connected direct to the tubing or in the swing iron heater.

The gas iron prevents the heating of the laundry or kitchen, as no stove fire is needed.

The most perfect ironing of all kinds is done with the ordinary domestic gas iron, and at the surprisingly small cost of 1 cent for 4 hours' use.

The most inexpensive and economical ironing appliance known.

Lighting.—Of the many open flame gas burners, the "Bray" gives the highest efficiency and the smallest gas consumption.

A higher candle power per foot of gas is shown for the "Bray" than with the ordinary gas tip.

The "Bray" is adopted by gas companies on account of its unequaled economy.

The inside check gives an even flame and a steady illumination.

Avoid the wasteful and unsatisfactory lighting burners sold by peddlers who claim for cheap and extravagant burners that they will "save half the gas and give twice the light."

The public is often deceived and made an enemy of the gas company by inefficient light and high bills caused by the use of the wrong gas burners.

Gas Arcs.—The gas arc is the best ventilator of stores and other buildings.

The light from the gas arc is the nearest approach to natural daylight of any artificial light. A pure light displays the natural colors of fabrics, besides giving "twice the illumination at less maintenance cost."

No gas arc installation should be undertaken without the "maintenance" contract.

Welsbach Gas Lights.—The "Welsbach" reflex gas light gives the purest, brightest light and is the most ecocomical light, cheaper (candle power for candle power) than oil and costs far less than electric light.

The maintenance cost for Welsbach lamps as against electric lights is as 1 to 3, reckoning the "tungsten" electric lamp as the lamp against which this comparative cost is based.

House Piping.—The secret of success in securing house piping orders lies in getting the piping done at the smallest cost to the property owner or tenant.

Wherever a gas range is installed, the gas pipe is already, at least, up to the kitchen.

For $2 the kitchen will be piped and one pendant gas light put on.

Extensions to other rooms at a small cost per foot represent only a comparatively trifling expense.

Watch for new buildings in course of erection and make sure that the "service" order be at once secured and that the owner will "pipe for gas."

Industrial Gas Appliances.—Always carry one or two copies of the industrial appliance lists, which show the appliance that can be advantageously used in every business.

Never neglect this part of our business.

Interest the business men, manufacturers, etc., in these appliances and refer all "prospects" to the industrial appliance salesmen.

Expert advice and instruction in the operation of these appliances are always at the service of our patrons, free of charge.

Non-Consumers.—Every new consumer means a "prospect" for all the gas appliances that could be used in each case.

Avoid taking an order from any non-consumer who will not be a profitable patron to the company.

The most likely field among this class is where electricity is used or where respectable families are still using oil.

One desirable new consumer means for the company an average of 4 new business prospects. (To be Continued.)

A Chemical Study of a 50-Horse Power Suction Producer.

[Prepared for the JOURNAL, by MR. B. M. FERGUSON, Detroit (Mich.) City Gas Company.]

The computation and results given in this article are based on test data taken with the object of making a chemical study of the operation of the gas producer, and also to determine the thermal efficiency of the machine. No meter was available to measure the gas generated, and various methods were used to determine this quantity, as will be shown below.

The fuel used was a Virginia pea-anthracite. It was not a good quality of coal for this purpose, as it contained a high percentage of ash and clinkered considerably, constant poking at short intervals

being necessary to keep the fire clean and to promote combustion. A test of a similar coal has been made at the government testing plant at St. Louis.

The analysis of the coal was made by the standard method. The amount of combustible matter present in the clinker taken from the producer plant from day-to-day was determined from a sample taken from each day's run, the object being to determine the amount of available combustible matter that came through the producer unburned. The residue was weighed and represents the per cent. of ash in the clinker, and 100 minus this quantity equals the per cent. of carbon in the clinker.

Calculations of the number of cubic feet of gas generated in the producer, from the composition of coal and gas as determined by analysis, were made as follows, the figures representing an average analysis of the gas produced:

Component.	Per Cent.
Carbon dioxide	6.66
Oxygen	0.59
Carbon monoxide	19.59
Methane	0.95
Hydrogen	13.49
Nitrogen	58.72

Average B.T.U. per cubic foot, calculated from analysis at 0° and 76 cm. = 125.5.

Taking carbon dioxide plus carbon monoxide as the basis of calculation, 1 cubic foot of gas contains 26.25 per cent. of these gases. One gram-molecule of carbon (12 grams) will occupy, as gaseous oxides, 22.38 liters of space as a gas, at temperature of 0° and 76 cm. pressure. That is, for every 12 grams of carbon available in the coal, 22 38 liters of a mixture of carbon dioxide and carbon monoxide will be produced. The total coal used in first week's test was 4,076 pounds.

From the analysis of the coal we know it to contain 76 per cent. of carbon; therefore, available carbon in the coal equals:

$$4{,}076 \times 0.76 = 3{,}100 \text{ pounds}$$
$$3{,}100 \text{ pounds} \times 453.6 = 1{,}406{,}160 \text{ grams.}$$

Since every 12 grams = 22.38 liters

$$\frac{1{,}406{,}160 \times 23.38}{12} = \text{liters of gas available} = 2{,}622{,}488.$$

Or,

$$\frac{2{,}622{,}488}{28\ 3} = \text{cubic feet} = 91{,}253.$$

If the gas were a pure mixture of carbon dioxide and carbon monoxide the coal used would give off 91,253 cubic feet of gas, but the gas obtained contained only 26.25 per cent. of carbon monoxide, plus carbon dioxide; therefore, the cubic feet of gas given off equal

$$\frac{91{,}253}{.2625} = 347{,}500.$$

The B.T.U. equivalent of 1 cubic foot of gas is 125.5; therefore, total B.T.U. in 347,500 cubic feet = 347,500 × 125.5 = 43,510,000.

B.T.U. equivalent of 4,076 pounds of coal = 4,076 × 11,825 = 48,190,000.

The efficiency of the producer would, therefore, be $\frac{43{,}610{,}000}{48{,}190{,}000}$ = 90.5 per cent., if all the carbon available were actually converted into gas.

The actual efficiency of producer was calculated from the data obtained during the test, taking into account the loss of carbon going into the clinkers. Since no gas meter was available to measure the amount of gas generated in the producer and passing into the engine the following methods were taken as a basis of calculation:

The first method depends on the weight of coal added and the weight of ash taken out during the test. Then, from the analysis of the coal and ash and also from the analysis of the gas generated, the cubic feet of gas generated can be calculated.

If a complete set of data be taken during the test this ought to prove the most accurate method; but in this test the amount of coal and ash in the producer was not weighed, and reliable calculations cannot be made on this basis. From the analysis of the clinker the per cent. of carbon was found to be as follows:

	Per Cent. of Carbon.	Per Cent. of Ash.
For the first week	44.38	55.61
For the second week	57.59	42.41
Average for the 2 weeks	51.59	48.41

Per cent. of ash in original coal = 16.53. Therefore, per cent. of carbon lost in clinkers is as follows:

$$\text{First week } \frac{44.38 \times 16.53}{55.61 \times .76} = 17.4$$

$$\text{Second week } \frac{57.59 \times 16.53}{42.41 \times .76} = 29.6$$

Since the observed data are incomplete these results cannot be confirmed.

Of the 3,100 pounds of carbon put into the producer in the first week only 82.6 per cent. was converted into gas, therefore, the pounds of carbon burned equal 3,100 × 82.6 = 2,560.

Cubic feet of gas produced = 347,500 × 82. 6 = 287,000.

Total B.T.U. in gas = 125.5 × 287,000 = 36,000,000.

Total B.T.U. in 4,076 pounds coal = 4,076 × 11,825 = 48,190,000.

$$\text{Per cent. efficiency of producer} = \frac{36{,}000{,}000}{48{,}190{,}000} = 74.5.$$

Second week: Total coal used = 4,962 pounds.

Total carbon in 4,962 pounds coal = 4,962 × .76 = 3,775.

Pounds of available carbon converted into gas equal 3,775 × .703 = 2,652.

$$\text{Cubic feet of gas generated} = \frac{2{,}652 \times 453.6 \times 22.38}{12 \times 28.3 \times .2625} = 300{,}000.$$

$$\text{Efficiency of producer} = \frac{300{,}000 \times 125.5}{4{,}962 \times 11{,}825} = 64.2 \text{ per cent.}$$

Average results for the 2 weeks equal:

$$\frac{74.5 + 64.2}{2} = 69.4 \text{ per cent.}$$

The Cubic Feet of Gas Generated, Calculated from the Densities of the Gases.

Weight of 1 liter in grams of carbon dioxide[1] = 1.9650.
" " " " " monoxide = 1.2505.

From the analysis of the gas we find 6.66 per cent. of CO_2 and 19.59 per cent. of CO, therefore, the weight of CO_2 and CO present in 1 liter of gas equals:

$$CO_2 = 1.9650 \times 6.66 = .131 \text{ gram.}$$
$$CO = 1.2505 \times 19.59 = .245 \text{ gram.}$$

Reducing CO_2 and CO to grams of carbon, we get .431 gram CO_2 = $.131 \times \frac{13}{44}$ grams carbon = .03575.

$$.245 \text{ gram CO} = .245 \times \frac{12}{28} \text{ grams carbon} = .105.$$

Total grams of carbon in liter of gas = .1407.

Pounds of carbon converted into gas in first week's test = 2,560; therefore, cubic feet of gas produced = $\frac{2{,}560 \times 453.6}{.14074 \times 28.3} = 292{,}000.$

$$\text{Per cent. efficiency of producer} = \frac{292{,}000 \times 125.5}{4{,}076 \times 11{,}825} = 75.$$

Pounds of carbon available in second week's test = 4,962 × .76 = 3,775.

Per cent. carbon lost in producer = 29.65.

Therefore, pounds carbon converted into gas = 3,767 × .7035 = 2,648.

$$\text{Cubic feet of gas produced} = \frac{2{,}648 \times 453.6}{.14074 \times 28.3} = 300{,}100.$$

$$\text{Efficiency of producer} = \frac{300{,}100 \times 125.5}{4{,}962 \times 11{,}825} = 64 \text{ per cent.}$$

Pounds carbon available in two weeks' run = 9,038 × .76 = 6,869.

Per cent. carbon lost in producer = 23 5.

Pounds of carbon converted into gas = 6,869 × .765 = 5,250.

$$\text{Cubic feet of gas produced} = \frac{5{,}250 \times 453.6}{.14074 \times 28.3} = 598{,}000.$$

$$\text{Efficiency of producer} = \frac{578{,}500 \times 125.5}{9{,}038 \times 11{,}825} = 67.7 \text{ per cent.}$$

These results are only approximately correct, and are given mainly for the purpose of showing methods of calculation. Calculation of cubic feet of gas used by engine during test from heat absorbed in scrubber water and heat given up by the gas in passing through the scrubber was made as follows: The cubic feet of water passing through the scrubber rise in temperature of the ingoing water and the fall in temperature of the gas passing through the scrubber were taken for each day. From this data we can calculate with a fair degree of accuracy the cubic feet of gas passing the scrubber.

B.T.U. given up by the gas for second week:

2/22 = 353,270	2/25 = 451,640
2/23 = 346,000	2/26 = 562,620
2/24 = 474,120	2/27 = 426,100

Fall in temperature of gas multiplied by the specific heat of the gas:

2/22 (514 — 55.25) × .019 = 8.71
2/23 (615 — 60.5) × .019 = 10.50
2/24 (630 — 58) × .019 = 10.82
2/25 (651 — 58.2) × .019 = 11.25
2/26 (679 — 58.3) × .019 = 11.80
2/27 (692 — 54.8) × .019 = 12.1

1. *Note:* See Dowson and Sarter, page 269.

Cubic feet of gas delivered each day:

$$2/22 - \frac{353,270}{8.71} = 40,600. \qquad 2/23 = \frac{346,000}{10.50} = 32,970.$$

$$2/24 = \frac{474,120}{10.82} = 43,800. \qquad 2/25 = \frac{451,640}{11.25} = 40,200.$$

$$2/26 = \frac{562,620}{11.80} = 47,600. \qquad 2/27 = \frac{426,100}{12.1} = 35,200.$$

Total = 240,370.

The equation expressing the above is:

Cubic feet of gas × .019 (specific heat) × T1 — T2 = B.T.U. given up

$$\text{Cubic feet} = \frac{\text{B.T.U.}}{(T1 - T2) \times .019}$$

Where (T1 — T2) represents fall in temperature of producer gas passing through the scrubber.

$$\text{Efficiency of producer} = \frac{240,370 \times 133.4}{4,382 \times 11,825} = 62.$$

4,962 pounds is the amount of coal used for the week, but at the end of the test approximately 580 pounds of unburnt coal remained in the producer. This, subtracted from 4,962 gives 4,382, the figure used above.

Calculations of cubic feet of gas used in the engine from revolutions:

	Counter at Start.	Counter at Finish.	Difference in Cycles.
2/22.....	833,593	907,970	74,377
2/23.....	911,030	982,556	71,426
2/24.....	986,625	1,059,274	72,649
2/25.....	60,844	125,710	64,866
2/26	130,780	202,183	71,403
2/27.....	206,002	258,243	52,241
Total.....			406,962

To get total intake strokes multiply by 2 × 406,962 = 813,924.

Area of piston = 95.033 square inches: 95.033 × 12 = 1,140.4 cubic inches displacement per stroke = .6635 cubic feet.

Pressure in cylinders at beginning of compression stroke = 12.7 pounds, absolute. Temperature of gases in cylinder estimated at 77° F.

To correct volume—

$$\frac{P1\ V1}{T} = \frac{Ps\ Vs}{T} \qquad Vs = \frac{P1\ V1\ Ts}{T\ Ps} = \frac{12.7 \times 1 \times 522}{537 \times 14.7} = .84$$

Total displacement = 813,924 × .6635 = 540,000; 540,000 corrected to volume Vs = 540,000 × .84 = 453,000; 453,000 cubic feet represents gas and air displaced in the cylinders of the engine. If now we find the ratio of gas to air, and multiply 453,000 by this quantity, we get cubic feet of producer gas used by the engine.

The amount of air required for combustion of the producer is based on the following:

$$2\,CO + O_2 \rightarrow 2\,CO_2$$
$$CH_4 + O_2 \rightarrow CO_2 + 2\,H_2O$$
$$2H_2 + O_2 \rightarrow 2\,H_2O.$$

For every volume of CO present in the gas ½ volume of oxygen is required for combustion. Since air contains $\frac{21}{100}$ of oxygen it will require

½ × 100/21 of air for every volume of CO
2 × 100/21 " " " " " CH_4
½ × 100/21 " " " " " H_2.

The average analysis of the gas for the second week shows: 23.90 per cent. of carbon monoxide; .73 per cent. of methane; 12.58 per cent. of hydrogen.

Volume of air required for combustion of each 100 CO =

$$23.90 \times \tfrac{1}{2} \times \frac{100}{21} = 56.9 \qquad .73 \times 2 \times \frac{100}{21} = 6.95$$

$$12.58 \times \tfrac{1}{2} \times \frac{100}{21} = 29.9 \qquad \text{Total} = 93.75.$$

Amount of gas in 453,000 cubic feet of a mixture of gas and air equals

$$\frac{453,000 \times 100}{193.75} = 234,100 \text{ cubic feet.}$$

$$\text{Efficiency of producer} = \frac{234,100 \times 133.4}{43.82 \times 11,825} = 60.5 \text{ per cent.}$$

The last two methods of obtaining the cubic feet of gas used by engine agree fairly well, and the mean of the other two results can be taken by the producer to the engine. After all, even if we weighed the amount of unburned coal and ash remaining in the producer at the time of test, the last two methods would have to be relied upon, because we have no way of telling how much carbon is used up by the blower in starting the test each morning. This is no inconsiderable amount, as shown by the log sheets.

The total time of run was 45 hours, and 13½ hours were spent in getting the fire up with the blower. Expressed in per cent. of time, it equal $\frac{13\frac{1}{2}}{58.5} = 23.1$.

Items of Interest
FROM VARIOUS LOCALITIES.

At the annual meeting of the Salem (Mass.) Gas Light Company the officers elected were: Directors, H. A. Hale, C. F. Prichard, A. W. Rogers, S. W. Winslow and J. B. Smith; Treasurer, H. W. Shuman.

The peripatetic "expert," known to fame as Prof. Wm. D. Marks (of that which he is professor, Heaven and Ma rks only know), seems to be out of a job; and this state of inacti vity troubles him much. And the latter conclusion would seem to be a fair one, the line for such belief being obtained from a letter recently written by him to the spectacular Mayor of Des Moines, the Honorable James B. Hanna. As is well known to the fraternity, shortly after Hanna was chosen Mayor of Des Moines, he elected to mark his reign by the selecting of a vicarious sacrifice, and after many days (not to mention anything about the nights) he butted into a goat, which proved none other than the Des Moines Gas Company. That corporation had been doing good work for the city and citizens of Des Moines for years, still it was up to Hanna to buck something, and over his choice of goat he stood firm. In consequence, the Company was, under Councilmanic and Mayoral joint attack, ordered to sell gas at a rate (90 cents per 1,000 cubic feet) which would mean an actual loss of at least 7 cents on every 1,000 distributed. The Company did agree to try the experiment of selling gas to large consumers at the net rate of 92½ cents per 1,000 (this would enable it to pay its fixed charges), and it was thought that the Hanna combination would agree thereto; but, no; it was 90 cents or nothing to them. When it was sought to enforce the ordinance the Company swore out a restraining writ, the same to remain effective until the Iowa courts at least had passed upon the measure. Then, enter Marks. Scenting a chance to help "the authorities of Des Moines" in their running down of the goat, he indites a letter to the Mayor—it should be noted that Marks had been employed in this Des Moines case by the Mayor during the early stages of the contest over the 90-cent measure—evidently hoping that there will be a second opening for him during the court presentation of the issue. In this letter Marks naively remarks: "In fixing 90 cents per 1,000 for Des Moines gas, you appear to me to have dealt liberally with the Gas Company, not following the downward tre nd of gas prices in an extreme or inconsiderate manner." He wasn't asked to write anything concerning this subject at the present sta ge of the proceedings.

At the annual meeting of the New York and Richmond Gas Company, Stapleton, N. Y., the Directors elected were: J. H. Browning, C. B. VanNostrand, W. J. Walsh, M. J. Dodsworth, Jos. H. Maloy, A. R. Fish and Donald McKay, of New York, and F. H. Shelton and B. L. Forest, of Philadelphia. That this Company's last twelvemonth was a prosperous one would seem am ply shown when it is noted that its net earnings from operation amounted to $132,250.79, and that its net profit over all was $54,921.89, a statement that puts the stock before any investor of sagacity as a pretty good thing at the quoted prices.

Last year, according to the official returns, the revenue to the local authorities, gained by the operation of the municipal lighting plants of Hamilton, Canada, amounted to $92,323. Of that sum the receipt on gas account was $44,456; electric, $47,866. Gas was supplied to 2,027 consumers, and electric currents were furnished to 1,066 users. The divisible surplus on both accounts was $17,500, of which sum gas was credited with $8,000.

The Superior (Wis.) Water, Light and Power Company has informed its customers that, after the 1st prox., the selling rate will be $1.30 per 1,000. The ruling rate is $1.40.

"W. B. M.," writing from Baltimore under date of the 24th inst., says: "I failed to note in the Journal any mention of the figures submitted by the Consolidated Gas, Electric Light and Power Company in response to invitations to bid on such account, or for the use of gas in public buildings and street lamps. Under the specifications prepared by Superintendent McCuen, the Company agreed, under a 1 to 5-year agreement, to commence the 1st of March to supply gas to the city buildings at 80 cents per 1,000—a concession of 5 cents per 1,000—and to supply gas to the street lamps at 70 cents per lamp per 1,000—a concession of 25 cents per lamp. Under the old contract the city (year 1910) used 7,600 gas lamps.

THE Independent Street Lighting Company has been absorbed by the Automatic Street Lighting Company, of Boston. Mr. P. R. Seamon, former Secretary of the absorbed corporation, has been chosen to a like position in the management of the Automatic Lighting Company.

THERE is no truth in the assertion that, when the New York, New Haven and Hartford Railroad Company took over the properties of the Connecticut Lighting and Power Company that it acquired control in the Derby (Conn.) Gas Company. The control of this Company remains where it has been for years – in the possession of Mr. C. H. Nettleton and his associates.

THE Massachusetts State Senate has refused to concur in the action of the lower legislative branch in adopting a bill that had for its object the abolition of any rental charge for meters by gas or electric companies.

EMPLOYEES of the Fall River (Mass.) Gas Company, to the number of 60 were the guests, in New Bedford, Mass., of the Gas and Edison Light Company, of that city, the evening of the 23d ult. The party travelled by special car, and in the evening visited the Hathaway Theater, the special entertainment there consisting of an excellent vaudeville show. After the performance the party went to the Parker House and shared in a repast that was marked by a varied and lengthy *menu*, crowned with an exhibition of good fellowship that completed the charming fraternity of the entire affair.

THE beautiful, modern office building of the Evansville (Ind.) Gas and Electric Company was badly damaged by fire the morning of the 21st ult. The fire originated in the premises occupied by the J. R. Golden Cigar Company, and the loss occasioned exceeded $100,000.

AT the annual meeting of the Chattanooga (Tenn.) Gas Company the officers elected were: Directors, Frank T. Hulswit, H.A. Thornton, G. Andrews, G. B. Caldwell, Richard Schaddellee, W. A. Sadd, W. E. Brock, G. E. McGee, Geo. H. Taylor, J. P. Hopkins and B. O. Robinson; President, J. P. Hopkins; Vice President, Richard Schaddellee; Secretary, B. O. Robinson; Treasurer, Geo. B. Caldwell; Chairman Executive Committee, G. B. Caldwell; Assistant Secretary, H. W. Frund. The annual reports showed that the Company had prospered well during the year, and the recommendations contained in the documents go to show that considerable sums will be expended the current twelvemonth in betterments to plant and mains extension accounts.

WE regret to have to chronicle the death, at Portland, Ore., on the 20th ult., of Mr. William Harrison Corbett, son of Mr. Charles H. Corbett, who will be affectionately remembered from his long and honorable connection with the Continental Iron Works Company, of Brooklyn, N. Y. Deceased was in his 43d year.

THE taxpayers of Middleboro, Mass., will shortly be called upon to say whether or not the municipal gas plant in that place will be rebuilt. The present plant is altogether antique, to say nothing of its inadequacy. In fact both of its status in the named respects cause one to wonder why hard-headed ratepayers (and many such are to be found in Middleboro) should continue to submit to the operation of the plant as at present constituted.

THE gas plant at Newton, Ia., is to be rebuilt, contracts for the construction of the necessary buildings having been awarded to Messrs. O'Donnell & McManiman, of Newton.

"H. L. S.," writing from Wilkes-Barre, Pa., under date of the 23d inst., incloses the following: Members of the Elgasta Club, composed of members of the local gas and electric organization and several friends, shared in a banquet at the Hotel Redding, on the evening of February 23d. The Club was organized last October by Mr. E. A. Wakeman, the Manager of the Company, and he has assured the members that as soon as the Company erects its new building quarters will be provided for the members. The Club quarters are now on North Washington street. In the absence of General C. Bow Dougherty, who was to have been toastmaster, H. N. Connell, the New York representative of the Company, acted. Addresses were made by S. J. Dill, Vice-President of the Susquehanna Railway, Light and Power Company; C. E. Bartlett, of Philadelphia; C. W. Laycock, H. H. Miller, H. L. Sterrett, E. A. Wakeman and Daniel L. Hart. Pleasing features of the evening were the Scotch dialect songs rendered by Chas. M. Gallagher.

"B. W. R.," writing from St. Louis, Mo., under date of February 26th, says: "At the annual meeting of the Laclede Gas Light Company 71,687 shares of stock were voted upon, and the Directors elected were: W. K. Bixby, Adolphus Busch, D. R. Calhoun, Murray Calhoun, A. C. Church, C. H. Hutting, Ed. Malinckrodt, Jas. E. Smith, C. H. Walker, Rolla Wells, T. H. West, C. L. Holman, Alonzo Potter. The Directors assembled in regular session shortly afterwards, and the hiatus as to the head of the staff, which existed for 2 years or so, was 'fixed up.' The general list of executives is: President, W. K. Bixby; First Vice-President and General Manager, C. L. Holman; Second Vice-President (new office) G. H. Walker; Secretary, W. S. Dodd; Treasurer, N. H. Whitton. This looks a pretty good organization; and out this way we are certainly holding Mr. Holman in high esteem."

AT the annual meeting of the shareholders in the Dayton (O.) Gas Light Company the retiring Board of Directors was re-elected. The Board in turn named the following executives: President, R. R. Dickey; Vice-President, Ed. W. Hanley; Secretary and Treasurer, H. R. Hooper.

SUPERINTENDENT FERGUSON has mapped out the routes and sizes for the main extensions from the Portsmouth (Va.) gas works, to and through the Prentiss Place and West Park View districts.

MR. CHARLES A. BUSH has resigned the position of distributing foreman to the Brockton (Mass.) Gas Light Company, in order to take up work under the direction of Mr. J. E. Philbrick, who assumes charge of the York (Pa.) plant the 1st prox.

Lamp Posts for Public Lighting.

The Morris Iron Company, 91 West street, New York city, successors to Elmer P. Morris Company, of New York city, and Frederick Iron Works, has recently enlarged its plant at Frederick, Md., and is now prepared to furnish both gas and electric lighting fixtures for outdoor lighting. Up to the present, the largest percentage of the demand has been for 2-light poles, suitable for gas arc lamps, and two of the designs are illustrated herewith. This Company has furnished

posts for many cities throughout the country where improvements have been made in the public lighting, among which may be named: New York, Washington, D. C., Newark, N. J., Lincoln, Neb., Poughkeepsie, N. Y., etc. A catalogue covering these types of posts will be ready for distribution shortly, and can be obtained by writing to the above address.

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MONDAY, MARCH 6, 1911.

The Market for Gas Securities.

Consolidated maintained its standing quite well, despite the decided comfort afforded the short enders in the news that came out from time to time. The railroad rate decision is followed by all sorts of fears regarding tariff tinkering, and these are abetted by prognostications respecting further legislative attacks on corporations. Meanwhile, this frothy stuff, in the instance of the lawmakers and their vagaries, is vastly more than offset by the knowledge that every natural condition so far favors a crop output for the year in staples that will exceed anything heretofore returned. Money is in the lathargic stage, it is true, but a very few speedy moves would soon unloosen the strong boxes.

Peoples, of Chicago, is ridiculously low, at 103¾ to 104, and Brooklyn Union looks inviting, even at 140. Laclede values reflect not alone the new financing of the property, but also the favor with which Mr. Holman's election to the Presidency of the Company was received.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

MARCH 6.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$78,177,000	100	139⅝	139¾
Central Union Gas Co. — 1st 5's, due 1972, J. & J.	3,000,000	1,000	102	103
Equitable Gas Light Co.— Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual Gas Co.	3,500,000	100	155	165
New Amsterdam Gas Co.— 1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	101½
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	35	50
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	98½	100½
New York and East River— 1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	100	102
Northern Union— 1st 5's, due 1927, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	—	75
Preferred	5,000,000	100	70	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	139	140
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106¾	107
Yonkers	299,650	500	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	⅝	¾
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	500,000	1,000	95	100
Boston United Gas Co.— 1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	59	60
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,860,000	1,000	104	106¼
Cincinnati Gas and Electric Co.	29,500,000	100	92	93
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. & Heating Co.	1,682,750	100	90½	91
Preferred	3,026,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	106½	—
Mortgages, 6's	3,600,000	-	89	100
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	—
Con. Mtg. 5's	976,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	3,500,000	—	102	105
Detroit City Gas Co.	6,580,000	—	—	50
" Prior Lien 5's	5,619,000	1,000	97	100½
Detroit Gas Co., 5's	381,000	1,000	75	80
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,350,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	112	113½
" Bonds, 5's	10,500,000	—	105	106½
Indianapolis	2,000,000	—	78	83
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis.	10,000,000	100	110¼	110½
Preferred	2,500,005	100	91¼	102
Bonds	10,000,000	1,000	102½	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas and Electric Co. " 1st Mtg. 6's	400,000	1,000	108	108½
Massachusetts Gas Companies, of Boston	25,000,000	100	92¼	92⅝
Preferred	25,000,000	100	96⅛	96¾
Montreal Gas Co., Canada	2,000,000	100	213	218¾
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	103¼	104
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	--
Consolidated 5's	2,000,000	—	104⅜	105½
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.— 1st Mtg. 5's	1,000,000	1,000	100	102
St. Paul Gas Light Co.	2,500,000	100	—	—
1st Mortgages, 6's	650,000	1,000	113	116
Extension, 6's	800,000	1,000	112½	115
General Mortgage, 5's	3,447,000	1,000	90	95
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	100	104
Washington (D. C.) Gas Co.	1,600,000	200	390	400
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	261	—

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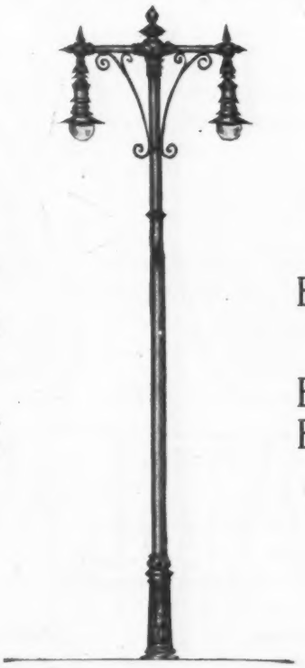

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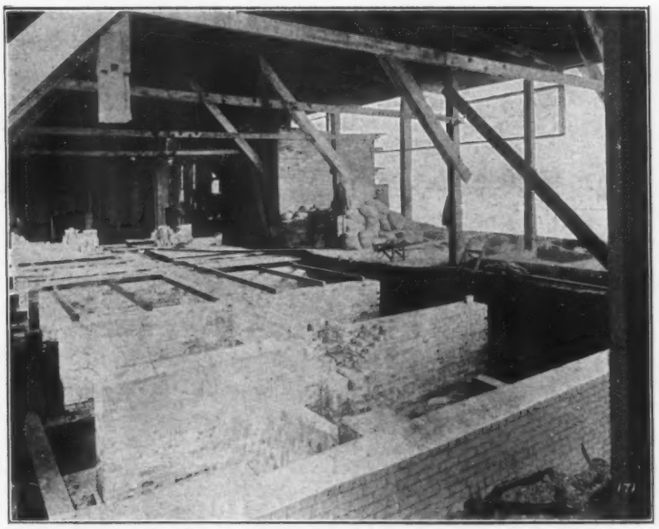

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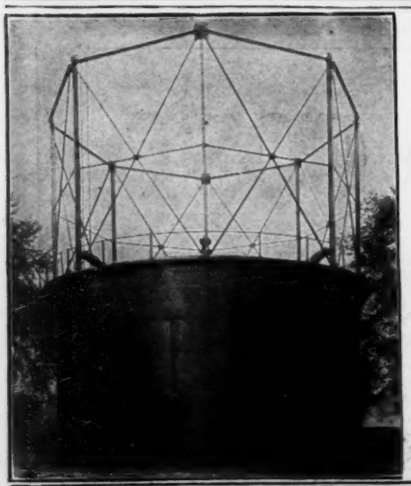

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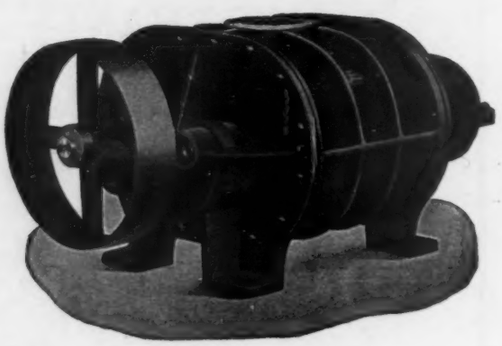

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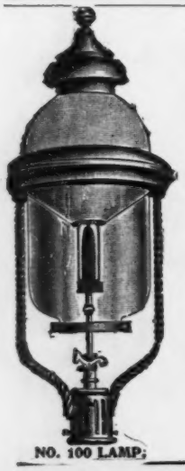

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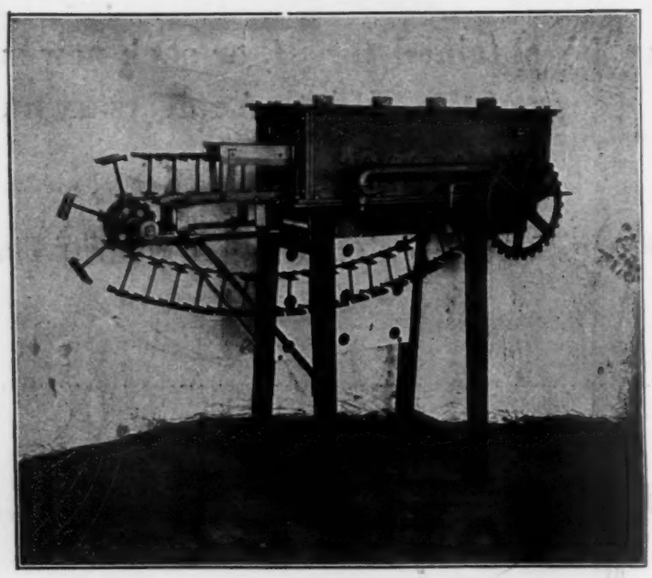

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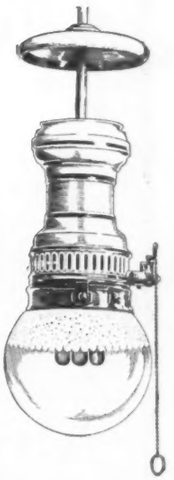

TIME was when stores at night were dingy, full of shadows, dark nooks and corners---but all that belongs to an age that is past.

This is a **luminous** age!

Once the night gloom of the retail store was dispelled by a few scattered, flickering tallow dips. Later the smoky, explosive kerosene lamp came into general use, and while it was an improvement, the idea of store lighting was still a narrow one---**"something to see by"**---that's all!

The prevailing idea of store lighting to-day is very different---not merely "something to see by," but **illumination**---everything illumined---the store flooded with light---light streaming into every nook and corner---darkness dispelled and the shadows driven out. The ideal store of the present is---THE STORE RADIANT! And the ideal way to make a store radiant is to install Humphrey Inverted Gas Arc Lamps. Their direct rays give you the light of day.

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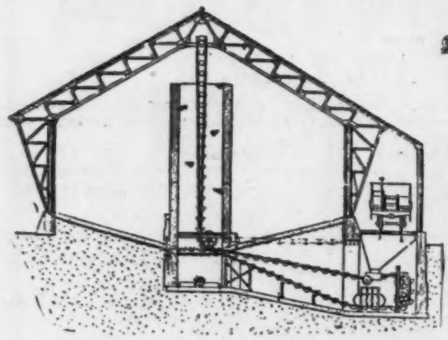

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PUBLIC LIGHTING TABLE FOR MARCH, 1911.

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Day of Week.	MOONLIGHT SCHEDULE.		
	Date.	Light.	Extinguish.
Wednesday	1	6.20 P.M.	5.30 A.M.
Thursday	2	6.20	5.30
Friday	3	6.20	5.30
Saturday	4	6.20	5.30
Sunday	5	10.30	5.20
Monday	6	11.40	5.20
Tuesday	7	1.00 A.M. F.Q.	5.20
Wednesday	8	2.00	5.20
Thursday	9	3.00	5.20
Friday	10	3.50	5.20
Saturday	11	4.30	5.20
Sunday	12	5.00	5.20
Monday	13	No L.	No L.
Tuesday	14	No L. F.M.	No L.
Wednesday	15	No L.	No L.
Thursday	16	6.40 P.M.	9.00 P.M.
Friday	17	6.40	10.00
Saturday	18	6.40	11.10
Sunday	19	6.40	12.10 A.M.
Monday	20	6.40	1.10
Tuesday	21	6.40	2.10
Wednesday	22	6.40 L.Q.	3.00
Thursday	23	6.40	3.50
Friday	24	6.40	4.40
Saturday	25	6.40	5.00
Sunday	26	6.50	4.50
Monday	27	6.50	4.50
Tuesday	28	6.50	4.50
Wednesday	29	6.50	4.50
Thursday	30	6.50 N.M.	4.50
Friday	31	6.50	4.50

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MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

American Gas Institute.—Annual meeting, October, 1911. St. Louis, Mo. Officers: President, Donald McDonald, Louisville, Ky. Secretary, A. B. Beadle, 29 West 39th st., N. Y. City.

Canadian Gas Association.—Annual meeting, June, 1911. ————————. Officers President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, Nov., 1911. New York City. Officers: President, C. R. Huntley, Buffalo, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street. New York City.

Guild of Gas Managers of New England.—Annual meeting, December. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, A. K. Quinn; Newport, R. I.; Secretary, Walter G. Africa, Manchester, N. H.

Illinois Gas Association.—Annual meeting, time, March, Chicago, Ills. Officers: President, A. S. Harrington, Chicago, Ill.; Secretary-Treasurer, C. B. Strohn, Elgin, Ill.

Illuminating Engineering Society.—Annual meeting, Oct. Chicago, Ill., 1911. Meetings of Sections, monthly. Pres't, A. E. Kennelly, Boston, Mass.; Secretary, Preston S. Millar, 29 W. 39th street, N. Y. City. Sections: New York: Secretary, Albert J. Marshall, 36 West 39th street. New England, Secretary, W. S. Farrow, 1290 Massachusetts avenue, Cambridge, Mass. Philadelphia, Secretary, G. B. Muth, 1000 Chestnut street Chicago, Secretary, F. H. Bernhard, Marquette Building.

Indiana Gas Association.—Annual meeting, Jan. 17 and 18, 1912, Indianapolis. Officers: President, S. E. Mulholland, Fort Wayne; Vice-President, Howard L. Olds, Indianapolis; Secretary-Treasurer, Philmer Eves, Indianapolis.

Iowa District Gas Association.—Annual meeting, time, June, 1911, ————————. Officers: President, Austin Burt, Waterloo, Ia.; Secretary and Treasurer, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, time, ———— Wichita, Kas. Officers: President, W. A. Scothorn, Hutchinson, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

Michigan Gas Association—Annual meeting, time, Sept. 20, 21, 22, 1911; Detroit, Mich. Officers: President, A. P. Ewing, Detroit, Mich.; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April 13 14 and 15, 1911; St. Louis, Mo. Officers: President, R. J. Irvine; Secretary and Treasurer, W. J. Cunningham, Springfield, Mo.

National Commercial Gas Association.—Annual meeting, December 5-12, 1911. Denver, Officers: President, C. N. Stannard, Denver; Secretary, Louis Stotz, 29 West 39th street, New York City.

Natural Gas Association.—Annual meeting, May 16, 17 and 18, 1911; Pittsburgh, Pa. Officers: President, John M. Garard, Columbus, O. Secretary, T. C. Jones, Delaware, O. Editor Wrinkle Department, F. W. Stone, Ashtabula, O.

New England Gas Association.—Annual meeting, third Wednesday in February, 1911; Boston. Officers: President, W. H. Snow, Holyoke, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

Oklahoma Public Utilities Association.—Annual meeting, May 9, 10 and 11, 1911. Officers: President, E. C. Reynolds; Secretary, Galen Crow, Guthrie, Okla.

Pacific Coast Gas Association.—Annual meeting, Sept. 20, 21 and 22, 1911, Oakland, Cal. Officers: President, F. A. Leach, Jr., Oakland, Cal.; Vice-President, W. Baurhyte, Los Angeles, Cal.; Secretary-Treasurer, John A. Britton, 445 Sutter street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, April, 1911, Reading, Pa. Officers President, J. H. Keppelman, Reading, Pa.; Secretary-Treasurer, William H. Merritt, Lebanon, Pa.

Society of Gas Lighting.—Annual meeting, December, 1911; monthly meeting, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, Waterbury, Conn.

Southern Gas Association.—Annual meeting, April 19-21, 1911, Montgomery, Ala. Officers: President, H. W. Frund, Salisbury, N. C.; Secretary-Treasurer, Jas. Ferrier, Rome, Ga.

Southwestern Electrical and Gas Association.—Annual meeting. April 27, 28, 29, 1911; Houston, Tex. Officers: President, W. B. Tuttle, San Antonio, Tex.; Secretary, D. G. Fisher, Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May ————, 1911, Milwaukee, Wis. Officers: President, W. H. Winslow, Superior, Wis.; Secretary-Treasurer, Henry Harmon, Milwaukee, Wis.

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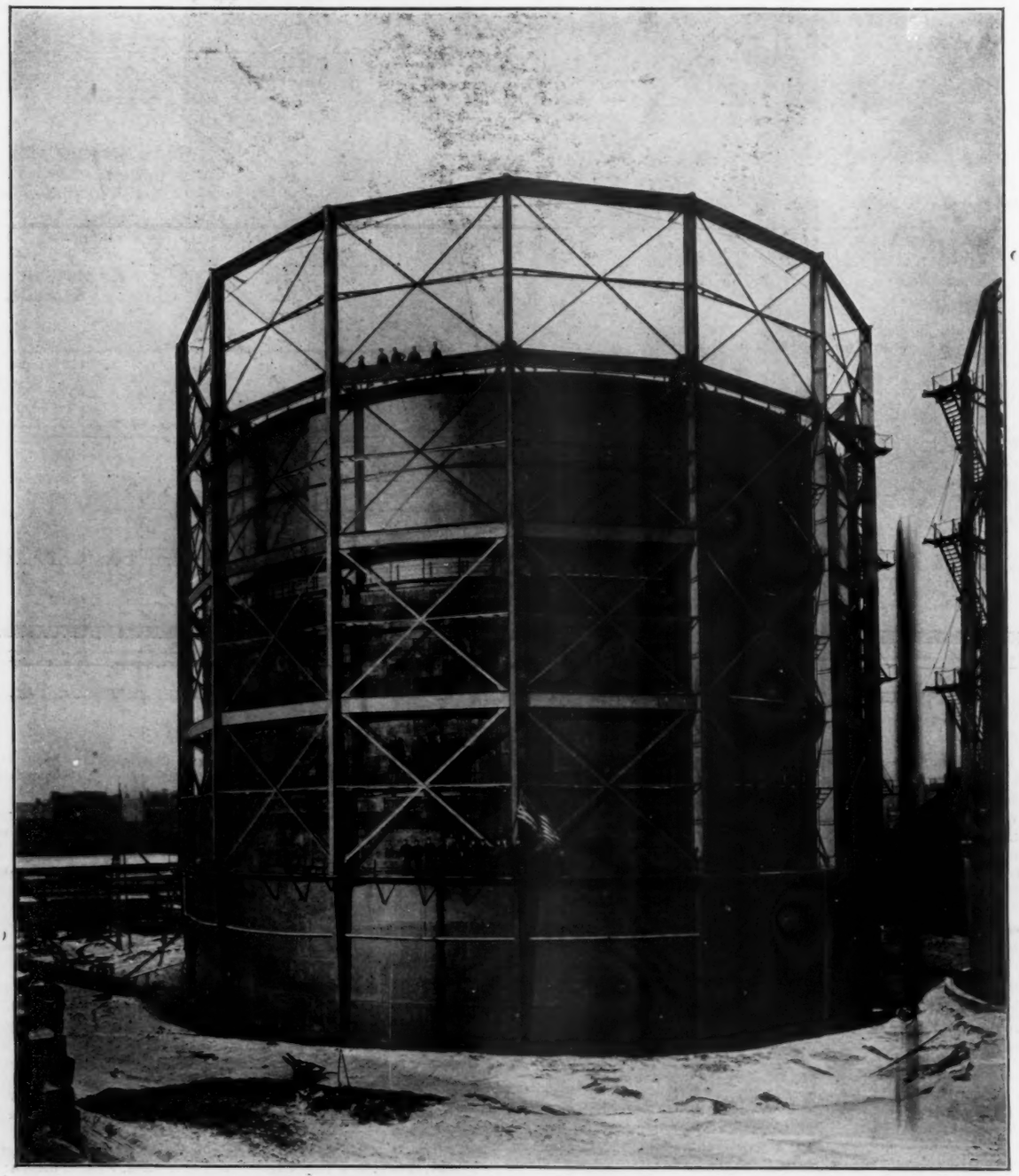

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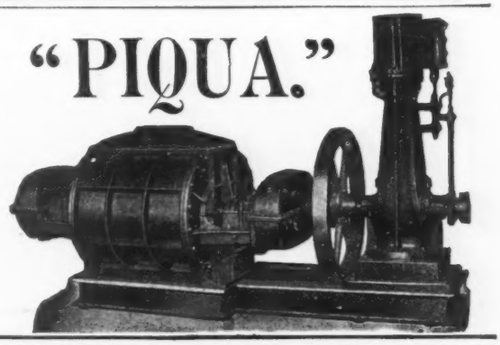

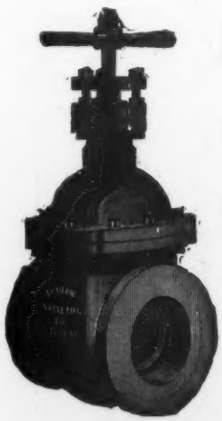

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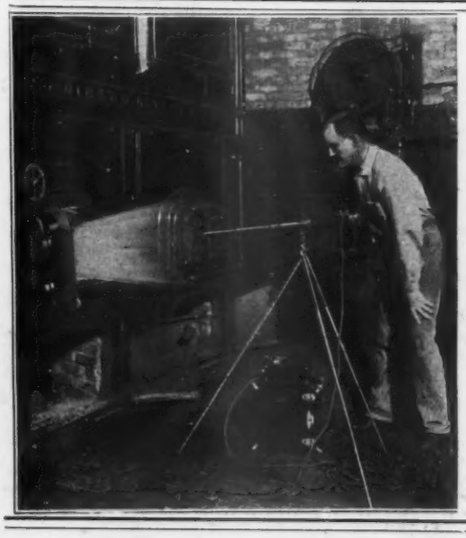

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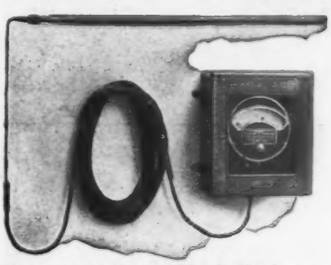

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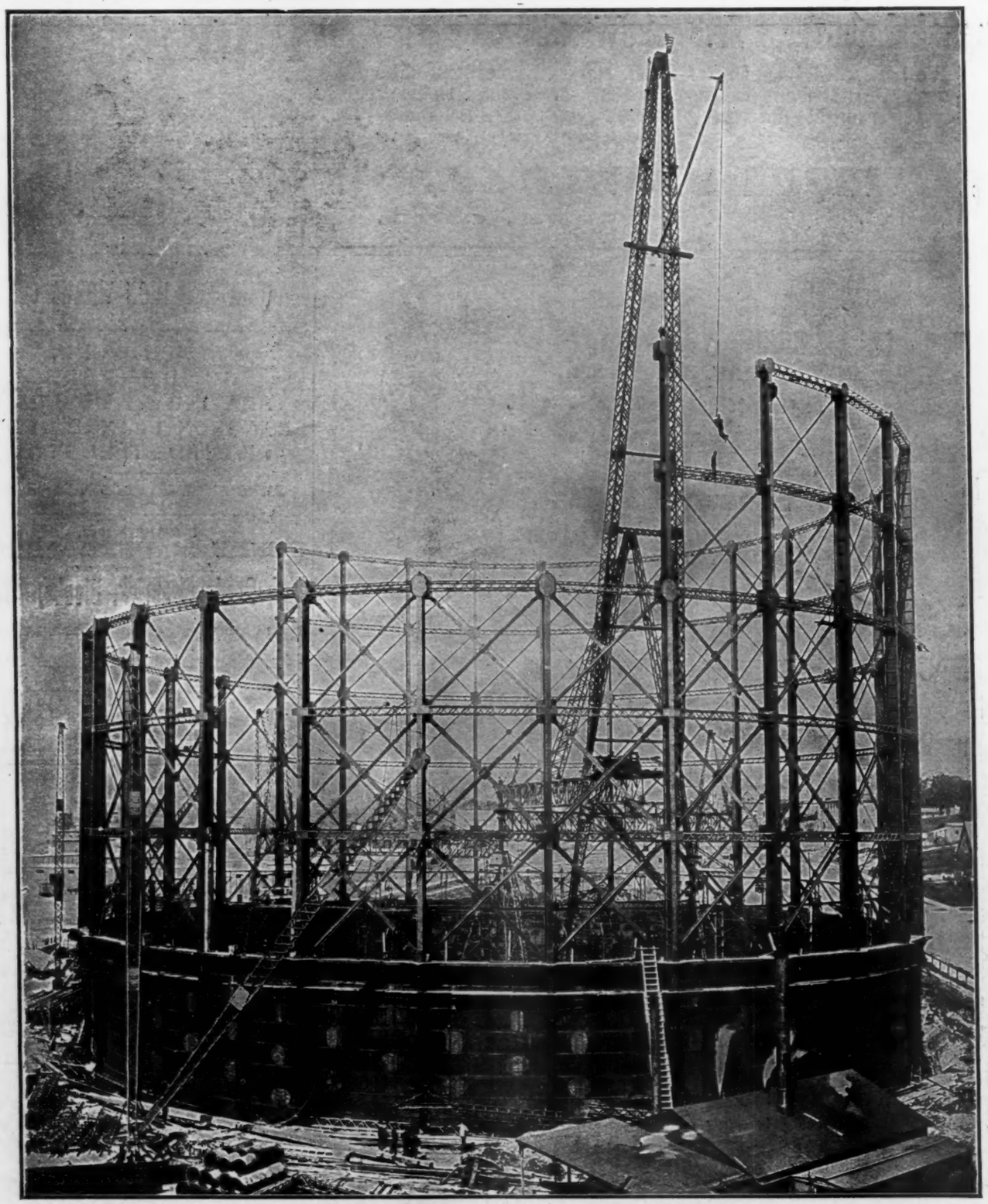

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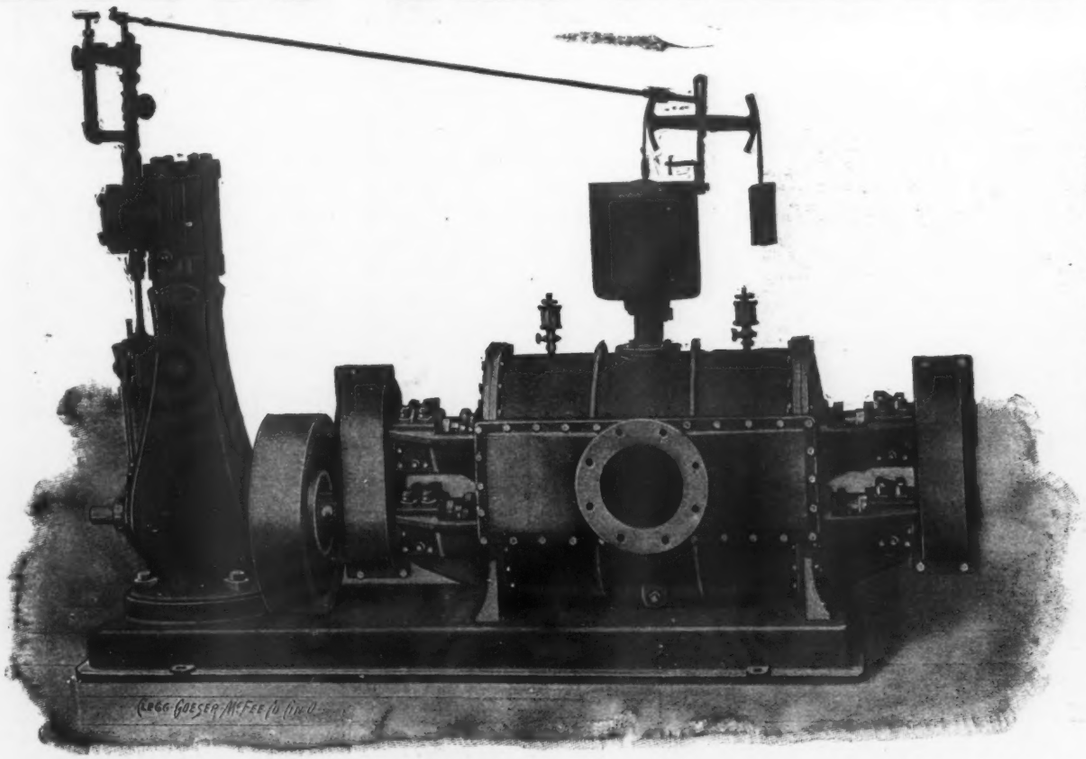

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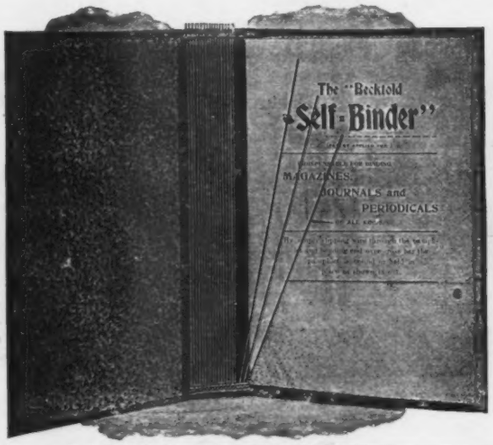

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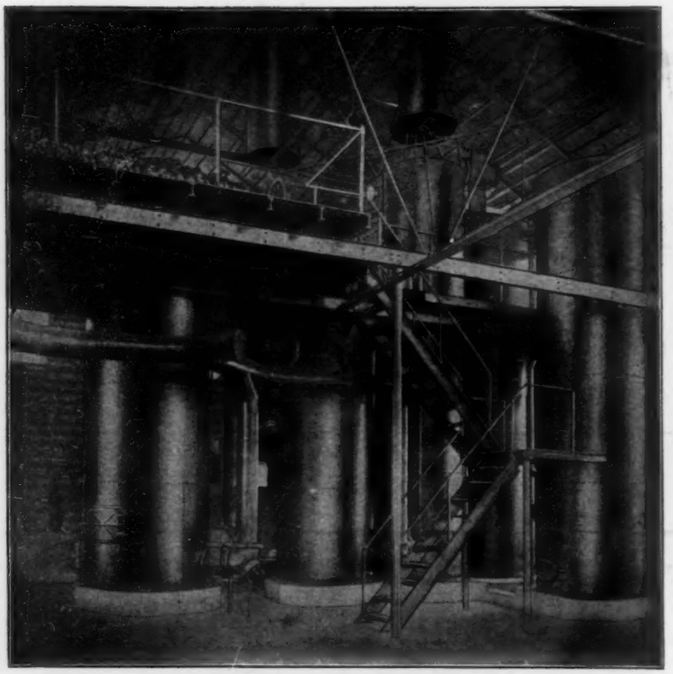

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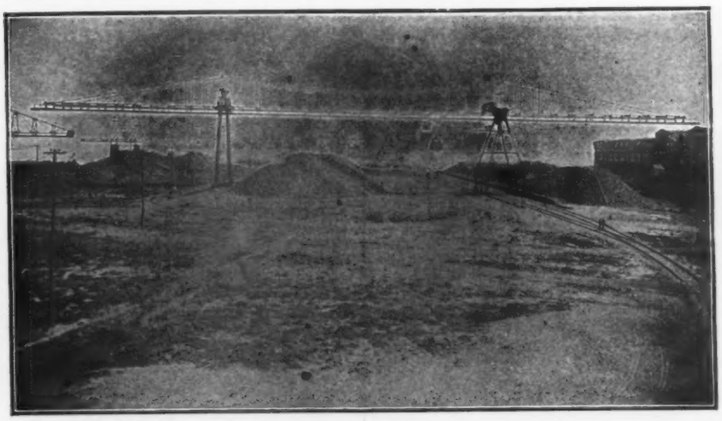

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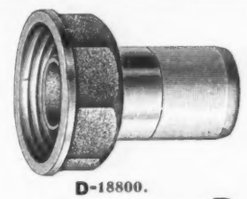

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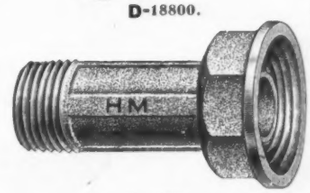

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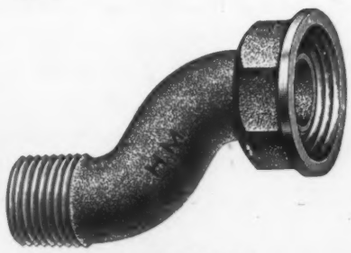

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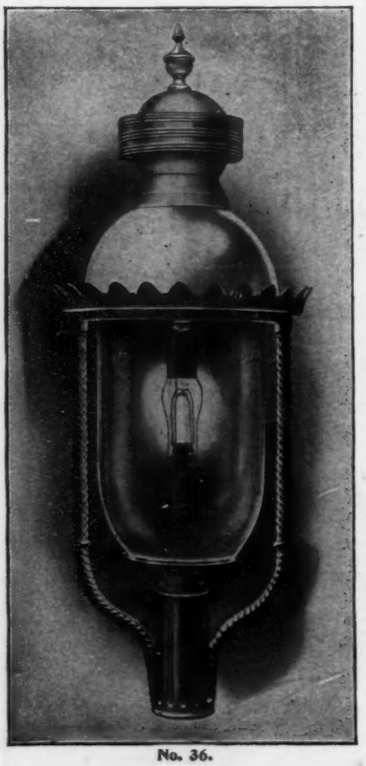

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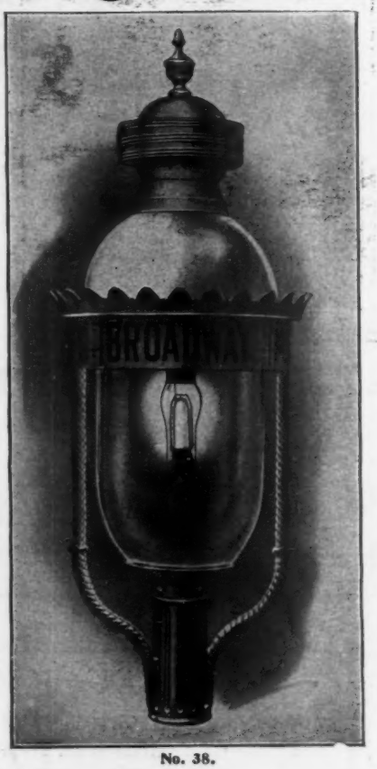

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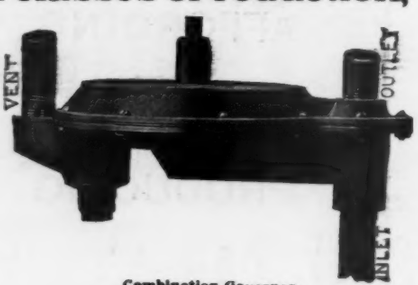

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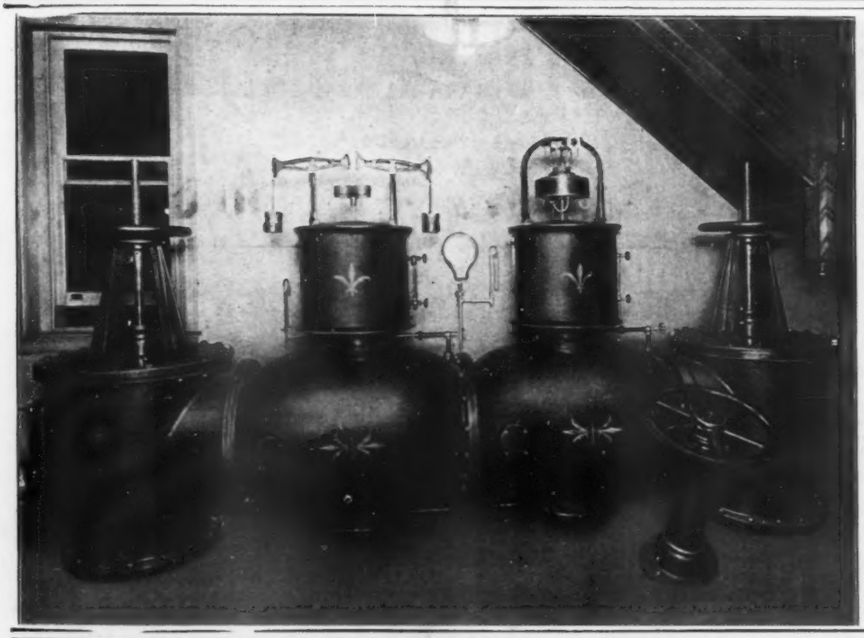

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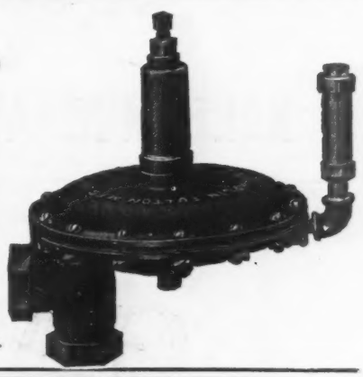

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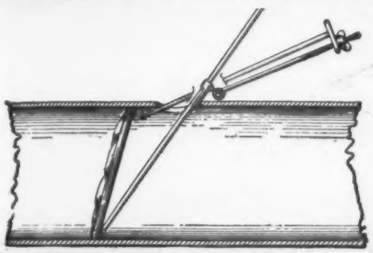

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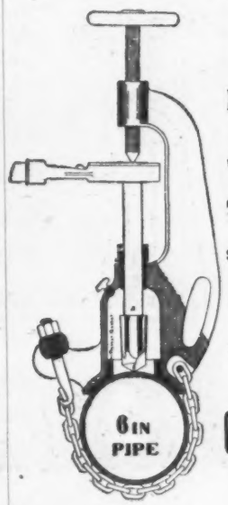

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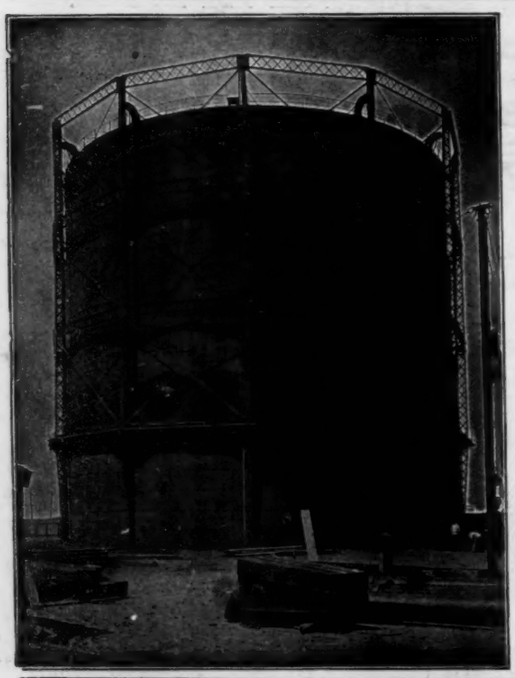

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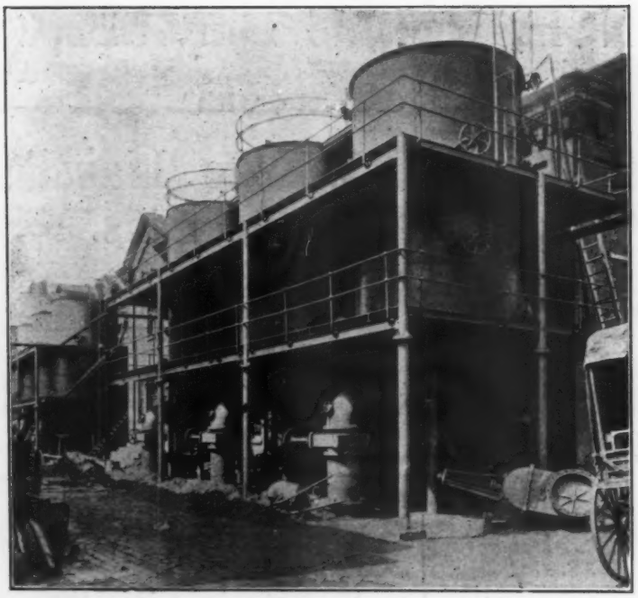

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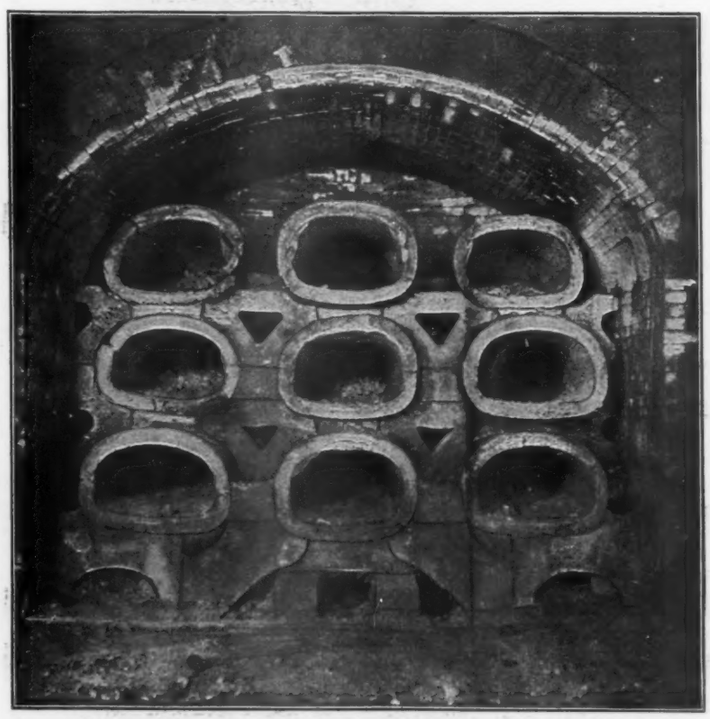

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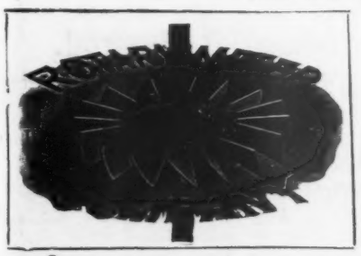

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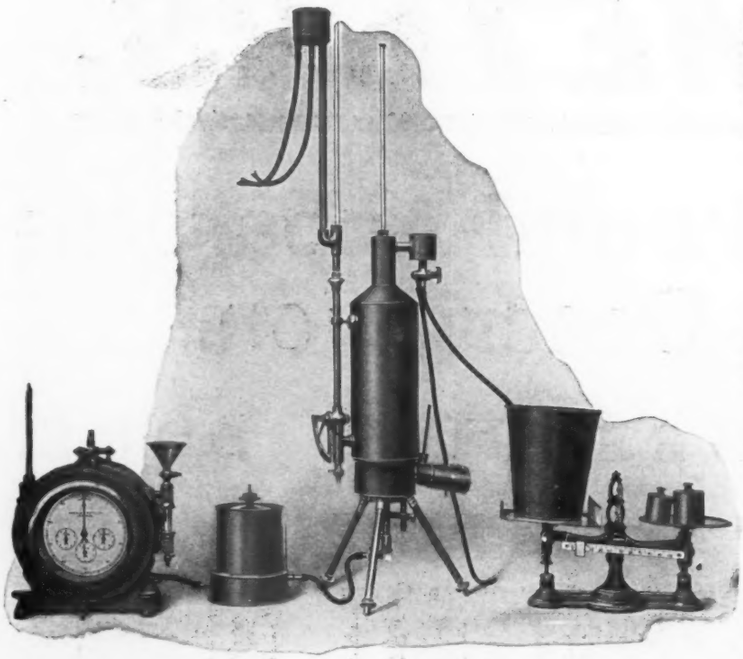

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